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See Advert. Page 11



"THE TIMES" OF THE TRANSPORT WORLD

ROAD CONSTRUCTION IN BELGIUM

See Page 3

VOL. LXXIX No. 2038

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Railway Award Reactions

THE most encouraging aspect of railway award reactions is the obvious determination of the leaders of the three railway unions to avoid indulging in strike talk. At the moment of writing the outcome of their meeting with the chairman of the British Transport Commission is not known and conjecture would be out of place, though that concerning the award itself, in which we indulged a week ago, proved fairly accurate. Although the unions lost no time in rejecting the award of the Railway Staff National Tribunal their "disgust and disappointment" were assuaged by Sir Brian Robertson's forthright statement, issued within 24 hours of its publication. In this he deprecated talk of a "wages battle," pointing out that the only battle in which Commission and unions were engaged was that for the future of British Railways. This battle could be won and, if won, would bring much greater reward to the men than anything now being claimed. Management and men must fight on the same side if it was to be won. Also the unions were no doubt reassured by Sir Brian's remark that, while increasing modernisation should bring improvement in the railwaymen's position, that did not imply their having to wait until its completion in 1962. He had deplored that the pace of modernisation had been checked recently by the cut in the investment programme. He wanted to give the order "full steam ahead" once more and would lend every effort to press for this and for any other measure by which the future of British Railways and railwaymen might be better assured.

The Commission's Dilemma

WITHOUT some Government aid or encouragement the Commission is tied hand and fist. An early restoration of the £30-million cut imposed on the modernisation programme might be helpful in bringing nearer the day when the railways can support themselves, but there is the sobering fact that nearly half of the £250 million allotted to the Commission to cover deficits up to 1962 has already been absorbed. Money for increased wages can only come from greater efficiency and economy, in which not only the staff but also the public will have to help. There will need to be a change, for instance, in the public's attitude towards the closing of unremunerative branch lines. The B.T.C. chairman has stressed the increasingly co-operative attitude of railwaymen towards economy measures. Sample investigations have indicated the existence of vast possibilities for savings in stores, maintenance and operating fields. In one or two instances, where the approach has been careful, the objects fully explained and the men humanely treated, results have been startling. Whether such movements get fully under way depends more than anything else upon the manner in which officers and supervisors pave the way with the men. Approached in the right spirit success will invariably be achieved. Meanwhile, railwaymen, outside the core of extremists and hotheads, must be becoming increasingly aware that their future depends upon their own efforts towards restoring the railways to a high state of competitive efficiency. They must surely realise that a strike at this time would be ruinous.

Transport in Belgium

ONE of the most interesting exhibitions ever to have been staged in Europe was being opened on April 17 on the outskirts of Brussels. The Universal and International Exhibition, 1958, is the subject of some comment and description elsewhere in this issue. In part it is a development of the exhibition halls familiar to many British transport people as the home of the Brussels Motor Show, but it has been extended in a most spectacular manner. The problem of access to the exhibition has brought about a remarkable improvement in highway facilities inside the urban area of Brussels and we describe these and other aspects of Belgian highway policy in an article by M. Goelen elsewhere in this issue. For mass transport to the exhibition the tramway system has

been extended and improved and we propose to deal later with alterations which have been effected not only in transport facilities to the grounds but in the heart of the city, where certain tram crossings have been segregated from other traffic by placing them in tunnel. Belgium has a very extensive railway system in proportion to population and area. It has been consistently planned at government level from its inception in 1835. Since 1935, when the Brussels—Antwerp line was electrified on the 3,000-volt d.c. system, considerable extensions to electrification have been made, a postwar plan having been initiated in 1947. Diesellisation has been extensively carried out on

million a year. . . . From one-sixth to one-third of this total can be attributed to handling. . . . An uninterrupted flow of materials to and from each worker will, on the average, raise productivity by at least 15 per cent without any change in the existing productive machinery." Emphasising also the need for speedy turnround the author pointed out that a 10,000-ton dry cargo ship costs approximately £800 every day it is in port; a large aircraft, awaiting cargo, may cost over £150 an hour; a 14-ton road vehicle, with driver, costs £5 a day when standing; and a railway wagon, for every loaded journey, spends on average two and a half days in terminals. The paper attracted an instructive

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secondary routes. Another well-planned feature of Belgian transport is the light-railway system, initiated in 1884, which covered 4,811 km. (3,007 miles) in 1945. Owing to successive transfers of the lesser-used routes to bus operation, the system is now reduced to roundly 2,000 km. (1,250 miles), of which approximately half is electrified, the remainder being conducted by diesel traction. In its great airline, Sabena, and in its port of Antwerp, its inland navigations and in its transport manufacturing industry, Belgium can show the transport visitor much of outstanding interest.

Savings from Handling Methods

PREFACING his paper last Monday to the Metropolitan section of the Institute of Transport (published in abstract on page 5) with the remark that his use of the word "handling" implied all aspects of transport, Mr. E. G. Whitaker, transport adviser to Unilever, Limited, quoted from the British Productivity Council's Report No. 3 to indicate its full significance: "Whenever material is handled something is added to its cost and nothing to its value. . . . There is a standing challenge to every industrial organisation to cut this cost. Such movements are apt to be overlooked when improved methods are under consideration. Yet they offer big opportunities for better ways and for lowering production costs—in other words, for increasing productivity. . . . Handling materials can go as high as 85 per cent of the cost of production, and it is not unusual for 50 tons of material, and sometimes more, to be lifted, moved, loaded, unloaded and reloaded for every single ton of finished product. Indeed, one of the biggest obstacles to rapid improvements in handling is that most firms know so little about their handling costs. The possibilities are shown by the fact that the wage bill of manufacturing industries is now approximately £3,500

discussion, during which were emphasised two needs—for bringing the staff into the picture from the commencement of work studies and for closer consultation on handling schemes between representatives of industry and transport.

Channel Air Bookings Doubled

SINCE last December, when Silver City Airways, Limited, introduced cuts of up to 50 per cent in its Channel air ferry rates for cars, bookings have doubled compared with the position at this time last year. Fares were reduced because traffic in 1956 and 1957 had fallen, apparently as a result of an earlier slight increase in fares. The drastic reductions constituted an act of faith which appears to be having a remarkably satisfactory effect—and possibly forming an object lesson for some older forms of transport. The figures for Silver City air ferry bookings were given last week by Mr. Eoin C. Mekie, the company's chairman, at Silver City House, the airline's newly opened headquarters in Knightsbridge. More than 30,000 cars had already booked for the present season compared with 14,000 by the same date in 1957. Although bookings are only paper figures, actual traffic carried between October 1 and March 31 had increased from 4,145 cars and 10,593 passengers in the last corresponding period to 7,698 cars and 17,830 passengers in those months just past. Productivity had also been improved by carrying an average of one extra car and two extra passengers per round trip. The 30,000 bookings level was not reached until August last year and even in the unlikely event of a fall in the rate of increase, it appeared that well over 50,000 cars would be carried this year—about 75 per cent to Le Touquet, which was now firmly established as a major cross-Channel port. Even so, there was still plenty of space available and the new headquarters was designed to deal with three times the current record traffic. A welcome trend in this year's

bookings was a more even spread over the year and a reduction of the unhealthy concentration of traffic over about six summer weekends.

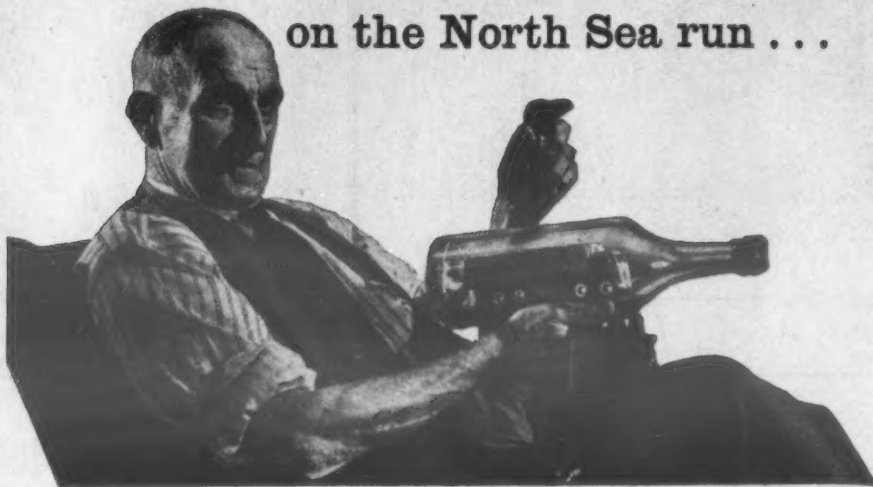
The Budget

THOUGH the Budget is regarded by many as appropriate to present economic conditions there is some disappointment in the transport industry at the absence of any reduction either in the purchase tax on commercial vehicles or in the fuel tax, which remains at its iniquitous level of 200 per cent. On bus users this is likely to have serious reactions; on behalf of the company operators it is pointed out that "further substantial cuts in services, particularly in the rural areas, are inevitable." In the Budget debate the Leader of the Opposition, in a reference to "the serious difficulties in the transport industry," regretted that the Chancellor had said nothing to make a settlement easier. He could have allowed the B.T.C., said Mr. Gaitskell, to go ahead with its investment programme and make possible a rise in productivity; that at least would have been a gesture which might have made it easier to get a settlement to this "exceedingly difficult dispute." Whether indeed such a step would help is questionable, but the Chancellor did not in fact rule out this possible solution to the railway wages impasse. In introducing the Budget he remarked that the existing tight restrictions on expenditure by the nationalised industries were flexible; "we can and will modify or relax them at any time when the moment seems right." The situation therefore remains fluid. We now had a golden opportunity, said Mr. Amory, at least to halt, and possibly reverse, the trend of rising prices from which we had suffered for so many years; it would last only as long as the terms of trade remained so exceptionally favourable.

London and the B.T.C.

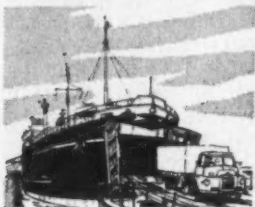
SPEAKING on April 16 at a luncheon of the Rotary Club of London, Sir Brian Robertson, chairman of the British Transport Commission, said that neglect of traffic problems might lead to awkward consequences to the users which, however, were not at all unavoidable. They could be avoided by staggering office hours, encouraging public and discouraging private transport, and insisting on the principle that parking must be paid for. Peak-hour traffics, he said, were carried at a loss because the large staff and rolling stock they entailed could not be fully employed for the remainder of the day. The obvious remedy was to charge the commuters extra, failing the staggering of office hours. If the Commission followed the advice that profit should be the sole criterion suburban trains, tube trains, buses and coaches would have to be cut down to the numbers which could be filled during the rest of the day: London would then not get to work. On the freight side there were too many goods stations in London; their layout, designed for days when unlimited cheap labour was readily available, was unsuited to our times. "Traffic must be carried at the rates which competition dictates," said Sir Brian, "and the rates which the railways have to quote today do not cover the present cost of the operation. Some steps to rectify this position are being taken now, but a good deal more remains to be done." There was a vast amount of heavy long-distance traffic passing to and from the London area which was not carried by either the Commission or the public haulier. It ought to be so carried because it was the steady, easy-to-carry traffic which provided the profit to cover the less profitable services which a public haulage industry must render to the community. Sir Brian pointed out that work on the £15 to £20 million diversion scheme from Cambridge via Bedford, Bletchley and Oxford to Reading had had to be slowed down owing to cuts in the Commission's investment programme. As to the remainder of the traffic, which must still cross London, the intention was to push the container principle for all it was worth and this would at least do away with the unloading and reloading of individual packages which went on at present.

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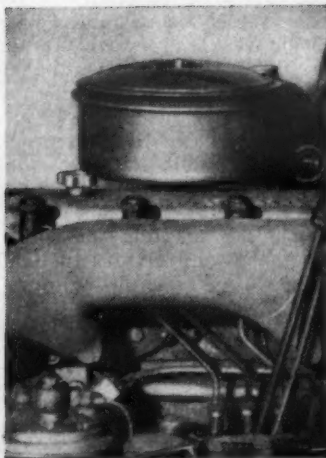
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Mr. M. B. Everley, joint director of Everley Bros. Ltd., Hayes, Middlesex, heavy haulage specialists, recently sent one of his fleet into the workshops to have new piston rings fitted. The vehicle, a 6-ton Commer with a Perkins P6 engine, had done 112,000 miles fully loaded, without the head being removed. When the pistons were drawn it was found that every ring was free in its groove and clean. "I wasn't at all surprised when I received the workshop report," comments Mr. Everley, "I've always used Shell Rotella Oil for all my diesels and I've yet to see one of my trucks in the shops with lubrication trouble."



LEADERSHIP IN LUBRICATION



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The Editor is prepared to consider contributions offered for publication in MODERN TRANSPORT, but intending contributors should first study the length and style of articles appearing in the paper and satisfy themselves that the topic with which they propose to deal is relevant to editorial requirements. In controversial subjects relating to all aspects of transport and traffic this newspaper offers a platform for independent comment and debate, its object being to encourage the provision of all forms of transport in the best interests of the community.

Staggered Hours

RELUCTANCE to change working hours, even by the few minutes usually required by staggering schemes, is not confined to Great Britain and, indeed, we know of one city where one employer's insistence upon a simultaneous start in a very large works not only involves traffic chaos at each end of the working day, but has been so costly to the transport undertaking in provision of crews and vehicles that the minimum fare has had to be set at an unusually high level. The latest assessment of the London situation introduces mention of an objection quite novel to us put forward by an employer as a reason for doing nothing—that female staff objected to the proposal on the grounds that a start as early as 8.30 a.m. was suggestive of factory hours

PASSENGERS TO AND FROM CENTRAL LONDON ON REPRESENTATIVE NOVEMBER DAY

Entering Central London a.m.					Leaving Central London p.m.				
15-min. periods	Main-line railways	Underground	Road	Total	15-min. periods	Main-line railways	Underground	Road	Total
7.0-7.15	6,800	6,100	9,600	22,500	4.30-4.45	16,000	27,500	15,800	59,300
7.15-7.30	11,400	10,400	18,700	38,500	4.45-5.0	26,800	37,900	18,800	83,500
7.30-7.45	21,400	19,300	23,000	64,600	5.0-5.15	51,800	70,600	24,000	146,400
7.45-8.0	28,700	33,600	26,500	88,800	5.15-5.30	39,300	70,600	28,000	137,900
8.0-8.15	28,800	30,500	24,200	83,500	5.30-5.45	67,900	90,700	31,100	189,700
8.15-8.30	41,100	33,600	29,500	104,200	5.45-6.0	57,300	66,700	34,900	158,900
8.30-8.45	39,400	50,600	32,900	122,900	6.0-6.15	43,900	48,700	32,000	124,600
8.45-9.0	68,400	74,600	29,400	172,400	6.15-6.30	24,300	27,900	23,800	76,000
9.0-9.15	62,200	75,700	23,800	161,700	6.30-6.45	16,600	20,300	14,800	51,700
9.15-9.30	45,200	51,600	18,800	115,600	6.45-7.0	11,500	17,200	11,500	40,200
9.30-9.45	25,500	45,800	13,800	85,100					
9.45-10.0	16,600	28,100	10,300	54,900					
Total	413,500	469,200	259,300	1,142,000	Total	375,300	472,400	236,700	1,084,400

and would involve loss of social prestige. It is a curious reflection on the intelligence of commuters that there should be resistance to the easing of their lot by spreading the peak, but there has obviously developed of recent years in more than one walk of life a snob appeal for hours of the order of 9 a.m. to 5.30 p.m. The traffic on the Eastern Section of the Southern suburban system has gone up 58 per cent since the war in the height of the peak, although the global passenger increase is only 10 per cent. In Central London quarter-hour periods following 8.45 a.m. in the morning and 5.30 p.m. in the evening are the crux of each peak, as can be seen from a table reproduced on this page. The voluntary Committee for Staggering of Working Hours in Central London was appointed by the Minister of Transport in the autumn of 1956 to investigate the problem of crush hour travel in the area and it has just published a report on its first year's work. It sits under the chairmanship of Mr. John Fitzgerald, J.P., C.C. Its office is at 22 Palace Chambers, Bridge Street, S.W.1; the report is issued by H.M. Stationery Office at 3s.

Investigation in Six Zones

STAGGERED working hours, it is stated, have cut the 5.30 p.m. peak of the London rush hour by 5 per cent. The hours of 21,400 employees in 145 firms have been changed as a result of the staggering campaign. This has taken 8,700 people, or 5 per cent, out of the worst period of the evening peak around 5.30 p.m., when one-sixth of all Central London's workers go home. In its survey of the London crush hour problem, the committee says that, although the total volume of the peak traffic has not increased appreciably in recent years, the concentration of traffic in the two maximum quarter-hours, 8.45-9 a.m., and 5.30-5.45 p.m., has been seriously aggravated. The campaign has been based on a direct approach to firms to stagger hours, and was based in the first instance on a record of the starting and finishing times of 545,000 people—representing about half of

Central London's workers. The 8½-square mile area of Central London was split into six zones, in each of which there was set up a zone committee to tackle the diverse peak travel problems by local investigation and discussion.

Achievements and Difficulties

THE biggest 5.30 p.m. homeward rush occurs in zone two, which takes in the expanding business area of Mayfair and the shops of Oxford Street and Regent Street. Here the committee has secured a 6 per cent reduction in the number of workers finishing at this critical time. In the City zones (four and five) where there are two distinct evening peaks at 5 and 5.30 p.m., the committee reports encouraging progress in relieving pressure at 5.30 and in cutting the 5 o'clock peak by 8 per cent. The congested travel to work periods in the morning have also been attacked by the committee. The chief target has been the 9 a.m. peak, and as a result of the campaign 7,400 people now start work earlier. The report quotes letters from firms who have staggered hours and comment on the real benefit their staff have obtained by easier travel conditions. The firms who have co-operated in the various zone staggering schemes represent a wide cross-section of Central London commercial life. The main difficulty in getting more firms to change long-established hours of business has been the reluctance of employers to take the commercial risk of finishing earlier than their competitors, or to adopt hours which might restrict contacts with customers, branches, factories and other firms. Staff difficulties, sometimes due to resultant changes in domestic routine in the mornings, have also proved obstacles. The G.P.O. has been unable to help by earlier deliveries of mail. Internal staggering in large firms has been tried by some organisations but seems insuperably difficult in others.

Main Targets

MAIN targets for the committee's campaign in 1958 include a new round-up of firms not yet working staggered hours; special meetings with the big stores to secure a change in shopping hours in the West End, where the 9 a.m. or 5.30 p.m. crush periods are the worst in London, which would make "a most important contribu-

tion" to solving the peak problem, and new talks with West End theatre managers to hold matinees earlier so as to take theatre-goers out of the evening peak. It is also intended to get in touch with firms in new buildings going up in the City and West End and prospective tenants of all buildings not yet completed so as to introduce staggered hours right from the start. In summing up, the committee says it is convinced that staggered hours can be of great assistance to Londoners at the present time when the country's resources are unlikely to permit new tube railways or road improvements on a scale that would appreciably relieve crush hour travel. "It may still be possible," states the report, "to halt the progressive aggravation of peak congestion on public transport services by voluntary action, if the public can be persuaded that it is to their advantage to demand and to support the changes needed. Whether by this means congestion can be reduced to tolerable limits is still in some doubt. Much depends on the passengers' interpretation of what is tolerable when an improvement requires them to take a commercial risk, or face a change of personal habits."

Forthcoming Events

April 19-20.—British Coach Rally. At Brighton.
April 21.—Institution of Naval Architects. Symposium on "Use of Plastics for Marine Application." At College of Technology, Portsmouth.
April 24.—Institution of Naval Architects. Symposium on "Use of Plastics for Marine Application." At Technical College, Southampton.
April 25.—Institution of Railway Signal Engineers (Bristol). Paper by Mr. W. H. Dyer, "Cables and Lines." At Lecture Room above main booking hall, Temple Meads Station, Bristol, 6 p.m.
Institute of Navigation. Paper contributed to by Royal Navy, R.A.F. and Ministry of Transport, "The Use of Simulators for Training Navigators to use Radar Equipment." At Royal Geographical Society, 1 Kensington Gore, S.W.7, 5.15 p.m.
Institution of Mechanical Engineers. James Clayton Lecture by Mr. A. C. Hartley, "Large Pipeline Projects." At 1 Birdcage Walk, S.W.1, 6 p.m.
May 13-15.—Public Transport Association. Annual Conference. At Harrogate.
June 3-6.—Institute of Transport. Congress. In Dublin.
September 1-7.—Society of British Aircraft Constructors. Flying display and exhibition. At Farnborough. (Public days September 5, 6 and 7.)
September 28-October 4.—Commercial Motor Transport Exhibition. At Earls Court.

ROAD CONSTRUCTION IN BELGIUM

An Assessment of its Benefits

By EDMOND GOELEN, Ingenieur des Ponts et Chaussées,
Belgian Ministry of Public Works*

NEED for extensive road construction exists in Belgium as it does in most countries, because the existing highway system was not designed for the large volumes of traffic which have developed with the motor vehicle. This need, even though it has always been recognised, never before resulted in as comprehensive a building effort as the present one.



The Brussels—Ostend motorway passes under an ordinary main road and provides non-conflicting connections to it

Belgium's social and economic needs and her geographic situation in the centre of the more important industrial and business places in Europe, make her largely dependent upon easy, fast and low-cost road transport.

Belgium has become so aware of the disadvantages suffered from roads which are inadequate for the traffic desiring to use them that she has recently resolved to remedy the situation. The road problem is made up, on the one hand, of the traffic volume and its future development and of the volume of accidents and their location; on the other hand, of the capacity of the existing roads, their inadequacies and the possibilities of their improvement.

Increased Traffic

The increase in road traffic in Belgium is so remarkable that various factors have been constant obstacles to this increase. The country was equipped with a dense network of waterway and railway communications before the advent of the automobile. The waterways serve the northern part of the country and total about 1,000 miles (much of which is available to 1,300-ton vessels), while the railways (largely in course of modernisation) total more than 3,000 miles, with the world's highest density in relation to area. Rural light railways or tramways further add about 600 miles to the system.

Motor vehicle registrations in Belgium in 1956 were 160 per cent of their 1950 number. With a ratio of about 14 people for every motor vehicle registered at present in Belgium, we know that we are far from having reached a saturation level. In the Brussels metropolitan area, ownership of the automobile is at higher level than in the country as a whole, for there are fewer than 10 people for every motor vehicle registered in our capital city.

There is an increasing percentage of heavy vehicles in the total registrations. This percentage of lorries over 2½ tons grew from 17 in 1931 to

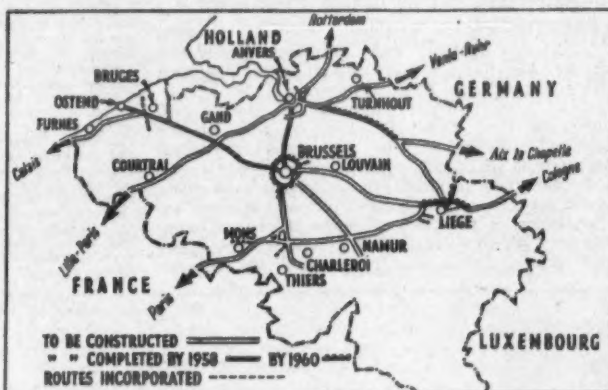
cent and the rural tramways 7.9 per cent. Although the use of automobiles has not yet in Belgium developed to the level reached in the U.S.A. for instance, it brings about a greater loss of human lives and a larger volume of physical damage than are found in industry and agriculture, including quarries and mines. The total number of accidents in 1955 amounted to 125,240 and resulted in 828 fatalities, 9,687 serious injuries and 40,670 minor injuries. The total cost of these accidents is estimated at about £21 million, including £7 million for administration costs of the insurance companies. If one of the initial causes of accidents lies in human error, their probability and severity are considerably influenced by the characteristics of the road. Road construction thus can have an immediate effect on the safety and the cost of transport.

Highway Programme

The improvement of the road network in Belgium has been studied in the light of traffic engineering principles; these recommendations resulted:

- (i) A motorway system of about 600 miles with fully controlled access;
- (ii) A primary I system (one roadway with three or more lanes of traffic) of about 900 miles;
- (iii) A Primary II system (one roadway with two lanes of traffic) of about 2,700 miles;
- (iv) A secondary system of regional interest of about 8,000 miles; and
- (v) Local roads and streets totalling about 24,000 miles.

We must endeavour to build the new roads in these systems and complete them as quickly as financial resources permit.



Existing and proposed motorways in Belgium

It may seem at first that, because there always were and always will be limitations upon financial possibilities, the building in rural areas of expressways with full control of access and for the exclusive use of motor vehicles is an unnecessarily expensive luxury. But the advantages relating to ease, speed, safety and low cost of transport on motorways as compared to ordinary roads in densely populated areas, where numerous unavoidable obstacles to traffic movement have developed, are such that motorways are a must for the access to and for the linking up of the larger urban areas; in Belgium they are about 30 to 50 miles apart.

Cost and Benefits

One mile of motorway costs about £285,000. In percentages of this unit cost, acquisition of land is about 8 per cent, earthwork about 56 per cent, bridges under and over about 20 per cent and sur-

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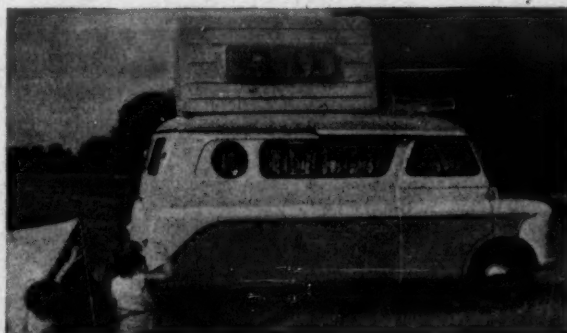
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The urban motorway in Brussels: Viaduct in the central area of the city and, right, the Waterloo tunnel

about 30 in 1953. The growing economic value of road transport is further indicated by the total percentage of lorries, which is now about 40 per cent, and by the relative changes in the methods of transport of goods and people. In 1954, of the total 8.8 billion freight ton-miles in Belgium 30.7 per cent was by road, representing more than 75 per cent of the freight work of the railways and 44 per cent of the total movement of goods by rail and water. In 1950 only 3 per cent of the overall freight haulage was by road. Similar changes are observed for the transport of people. Roads now handle 61.8 per cent of the total 9.6 billion passenger-miles generated by public transport while the railways take 30.3 per

facing about 16 per cent. It is accepted that acquisition of land and earthwork are not to be amortised for they are not to be renewed; their annual cost thus corresponds with the simple interest on the invested capital. Life periods of 50 years for structures and 25 years for surfaces are considered appropriate. To the annual cost of the capital invested is added the annual cost of maintenance, including signs and snow removal, which is estimated at £5,700 per mile. The total annual cost, at 4 per cent interest, comes out at £18,500 per mile.

The benefits gained by motorway users may be computed as a saving of over one penny a vehicle-mile on tyre wear and mechanical maintenance; 15 per cent on fuel consumption or one-third of

(Continued on page 6)

*Abstract of a recent address to the All-Party Roads Group, House of Commons.

LORRY—BUS—COACH

How Much for Fares Resistance?

ESTIMATES of public resistance to higher fares on bus services made by the Bristol Omnibus Co., Limited, might not prove to be reasonably accurate, says the Minister of Transport in a recent appeal decision, and the new fares granted should be subject to review when sufficient time has elapsed. He has dismissed an appeal by Bath City Council in respect of services operated by the Bristol subsidiaries in that city. Mr. P. H. F. Clarke, appearing at the appeal for the Bath City Council, submitted that in an earlier application in March, 1957, a gross product of £156,000 was reduced by only £18,000 for fares resistance. In the present case £234,000 was being reduced by £108,000, leaving £126,000 as the undisputed net product required of the increase. The difference was too wide to reconcile. Bristol said it had underestimated resistance in March, 1957.

For the calculation of resistance, the applicant had taken a percentage of the value of fares; for single fares 6½ per cent of £1,477,880, i.e. £96,100 and for return fares 1½ per cent of £688,280, or £12,210, making approximately £108,000 together. The Minister's inspector (Mr. J. M. Glen) says that in fixing increases, account must be taken not only of resistance but also of declining traffic for other reasons, but only those fares increased would be subject to resistance. The statistical implications of the percentage method employed need further examination. As applied it is inappropriate as an assessment of a general trend in traffic. Percentage also assumed that resistance would be the same irrespective of the size of an increase and its proportion to the fare before increase. The fares scheme put forward seemed undesirable if it provoked so much resistance and was therefore relatively unproductive, but there appeared no ready alternative.

Haulier Presents Gold Watches

LAST week Mr. E. Wade, managing director of Wades Transport (Tottenham), Limited, and D. H. Transport, Limited, Tottenham, presented gold watches to nine employees who had each been with him for 25 years. Wades Transport is stated to operate 30 vehicles mainly on the long-distance carriage of new furniture and bulk traffic, and D. H. Transport to have 50 vehicles.

Fare Reduction for Short Distances

FOR an experimental period of three months from May 4, Maidstone and District Motor Services, Limited, is to reduce many bus fares in the Hastings and Bexhill areas. One of the objectives is to remove what is thought to be travel resistance on shorter journeys, where there are anomalies caused by stages of different lengths. By introducing further stage points the operator is bringing all fares nearer to standard in terms of distance given. The reductions will operate on fares up to 6d. (It is understood that the 3d. concession fare introduced under dispensation by the Gosport and Fareham Omnibus Company in January for a period until March 28

has not proved a success and is not to be extended. The concession applied at off-peak hours, when the 3d. fare replaced fares up to 9d.—Editor.)

Nottingham—Derby Service Appeal

AN appeal by the British Transport Commission against the East Midlands area Traffic Commissioners' decision authorising an express bus service, with no intermediate stops, between Derby and Nottingham to the Trent Motor Traction Co., Limited, and Barton Transport, Limited, was heard this week in Nottingham. The hourly service commenced on April 5. On Monday this week British Railways introduced diesel railcars between the two cities, covering the distance in 34 min., also between Nottingham



The Brussels Exhibition has given a marked impetus to traffic on the Tilbury—Antwerp ferry; left, Evan Cooks now operates a service over the ferry with Bedford articulated pantechnicons; right, a Thames Trader articulated vehicle of the Fairey Aviation Co., Limited, recently delivered a Fairey Delta II nose tip for display at the exhibition

and Lincoln in 60 min., Nottingham and Leicester in 51 min., Leicester and Burton-on-Trent in 66 min. and Leicester and Birmingham in 79 min.

Inroads into MacBrayne Steamer Traffic

UNCONTROLLED abstraction of traffic in the Western Isles from ships to road transport might eventually lead to the curtailment of some of the cargo-carrying services of David MacBrayne, Limited, it was stated in Inverness on April 9. For the second time in two days the company was opposing applications before a sitting of the Scottish area Licensing Authority by Skye haulage contractors for an extension of their licence conditions to enable them to carry agricultural feeding stuffs direct from Glasgow to the island. Despite the opposition, Mr. Alex Robertson, the deputy licensing authority, granted the application, stating that progress in the Highlands could not be retarded although it might mean abstracting traffic from MacBrayne. The present application was by Stormont and MacLean, Portree, to carry agricultural feeding stuffs belonging to Scottish Agricultural Industries,

Limited, and distribute them throughout Skye.

This traffic has hitherto been carried by MacBrayne steamers from Glasgow to Portree for distribution. An S.A.I. representative claimed that the new method would be much more efficient and there would be reduced risk of loss through damage. Major J. H. Shields, MacBrayne road transport manager, said that cargoes to and from the east and west sides of Skye were diminishing and it might be that, if further diminished, the services might be withdrawn altogether. The Highlands and Islands Advisory Panel and the Crofter Commission had from time to time referred to the urgent need for transport at reasonable rates, said Mr. Robertson, and he had already decided to grant this application, designed to provide Skye with improved transport facilities.

Haulage Wage Award

IT became known after the meeting of the Road Haulage Wages Council on Wednesday last week that, following day-long deliberations, the independent members recommended a 5s. per week award for adult workers, with proportionate rises



drivers' tests and references; action taken in regard to accidents; average age and marital status of drivers; bonus schemes; any hazardous loads carried; general impression of the management.

The underwriter, said Mr. Kendall, was not the type of man who accepted business at a price and at the end of the year decided on experience that he required more money. He went deeper into the matter than that. Experience might be bad because of one very heavy claim, alternatively, there might have been a large number of small claims, most of which could have been avoided. In fleet insurance it was considered that 0.75 accidents per vehicle per annum was reasonable and this figure, referred to as "accident frequency," played a large part in determining renewal premiums. The cost of repairs had gone up at least three times and sums of from £5,000 to £20,000 in damages were being awarded in the courts, but premiums had advanced since 1948 by only 50 to 60 per cent for commercial vehicles.

His company kept drivers' record cards, started once a man had had an accident, and brought out at every subsequent accident and after a man had had three accidents the insurer was asked to have him on the carpet. The union could be told that it was the insurance company that requested this action; sometimes the insurance company's engineer could talk to the drivers.

Perishable Foodstuffs Transport Guide

IN order to assist operators or users of perishable foodstuffs transport, the E.C.E. working party on transport of perishable foodstuffs has produced a publication "Transport of Perishable Foodstuffs" (H.M.S.O., price 1s. 6d.). Prepared in conjunction with the International Institute of Refrigeration (I.R.I.), it is the outcome of several years' study of the problems of conserving perishable foodstuffs during transport. It contains notes on the thermic condition of perishable foodstuffs; general state of foodstuffs, their packaging and stowing, loading and transport temperatures for fresh, frozen and deep-frozen foodstuffs; special transport equipment to be used; temperatures at which the foodstuffs should be carried to ensure their proper conservation, and the types of equipment to be used for various transport operations.

Bus and Coach Developments

L. and J. Sheppard, Broad Town, near Swindon, seek the excursions and tours from Swindon of J. F. and H. Mapson. Rhonda Transport Co., Limited, proposes a Saturday service between Porth and Evanstown to replace its Talbot Green—Giffach Goch service.

Bristol Omnibus Co., Limited, and the Cheltenham District Traction Company propose a considerable revision of services in Cheltenham.

The West Midlands area Traffic Commissioners have given notice of a hearing on May 12 at which they will consider the revision of excursions and tours fares in the Birmingham and District and West Bromwich and District standard fare areas. Maidstone and District Motor Services, Limited, proposes a further reorganisation of its services in the area west of Tunbridge Wells. The East Grinstead—Tunbridge Wells section of 97 (East Grinstead—Ashford or Hawkhurst) would be withdrawn and the road covered by the extension of 93 (Tunbridge Wells—Penshurst—Edenbridge) via Hever, Cowden and Holtye to Tunbridge Wells, thereby resuming its erstwhile circular form. The Holtye—East Grinstead section would be covered, as now, by 135 from Edenbridge, but that would operate via Stick Hill instead of Hever between Edenbridge and Cowden Crossroads. The Stick Hill road has been covered by 137 (Edenbridge—Hartfield—Crowborough—Friars Gate) but this would become East Grinstead—Crowborough via Forest Row, Hartfield, Lye Green and Summerdales Hill or Friars Gate.

Self-Help Earns Lower Premiums

MAINTENANCE systems, vehicle records, driver control and accident prevention scheme all had a bearing on the insurance premium paid by fleet owners, said Mr. J. C. Kendall, lately chief engineer of the Zurich Insurance Co., Limited, at a meeting of the London division of the Industrial Transport Association on April 15. When investigating a new insurance proposal the company's engineer would seek to satisfy himself on such matters as: appearance of vehicles; evidence of proper maintenance; whether workshops adequately equipped and staffed; who was responsible for drivers;

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HANDLING RAW MATERIALS AND MERCHANDISE

Methods of Reducing Manual Labour

By E. G. WHITAKER, M.Inst.T., Transport Adviser, Unilever, Limited*

SINCE the last war much thought has been given to handling problems and revolutionary ideas have emerged as regards both methods and appliances. Furthermore, in many organisations those entrusted with responsibility for these developments have been accorded senior management status commensurate with the important contribution they can and are making in reducing handling and costs. If the utmost economy is to be achieved those responsible should have authority to control all stages of handling, and there should be the closest co-ordination between the supplier of goods or raw materials, the production engineer, the transport agency, and the receiver. Those to whom this responsibility is given should have a wide knowledge of materials handling techniques, should keep abreast of current developments, should have an inquiring mind, taking nothing for granted, and imagination and initiative.

The principles of good materials handling have been variously described; the following are typical:

- Minimise handling, since it adds nothing but cost to the finished product.
- Never move anything more than once between processes where this can be avoided.
- Integrate materials handling with the process: do not consider it as an ancillary.
- Plan handling as systematically as a direct operation of production, study layout with the object of reducing the distance and number of times material is moved.
- Never decide on the designs for new buildings until the handling operations have been planned.
- Work should be done on materials while in transit wherever this is economical, practical and safe.
- Persuade suppliers to deliver materials in the most convenient form and size for handling.
- Study the range and number of containers with the object of reducing them.
- Never place materials directly on the floor but put them on a pallet or dunnage.
- Use gravity wherever possible.
- Mechanise wherever economical.
- Maintain the planned system of handling: see that unauthorised changes do not creep in.
- Continue to examine the system for possible improvements.
- Considerable savings in manual labour and in labour costs generally can still be made by improved techniques of materials handling, resulting in a reduction in the numbers of staff employed and an increase in the effectiveness of those retained. This again will be accompanied by a reduction in the fatigue of the work, and by fewer accidents and less damage.

Securing Economy in Bulk

Handling costs are at their minimum when goods are moved the greatest possible portion of their journey in bulk, the ideal for liquids and a variety of other commodities being to load direct from the point of production by pipeline, chute, conveyor, or other direct method, to bulk transport units, and to unload similarly at destination.

For example, salt for Avonmouth is now loaded into transport units by gravity from silos at Northwich. It is transported in bulk to Avonmouth, where a pipeline from the transport unit is connected to a pipeline at the receiving premises. The salt is fluidised by injecting air pressure into the flow, just sufficient to suspend the particles, but insufficient to propel them. It is then pumped in the same way as water, and delivered into the silo, which is some 50 ft. above ground level. Before this method was introduced the salt was bagged at Northwich, and sack-trucked on to the transport unit. (It could, of course, have been palletised.) At Avonmouth it was sack-trucked from the transport unit to a conveyor, which carried the sacks to the top of the silo where they were cut and skipped. The new method has eliminated a considerable amount of handling and speeded up the turnaround of the transport unit, which can now be discharged, without labour, at a rate of 20 tons an hour.

Packaged Commodities

With packaged commodities, the objective again should be to move in bulk, i.e. in unit loads, over the greatest possible portion of the journey, and in this field fork-lift trucks and pallets have revolutionised the handling techniques. It is most important to have regard to the size, shape and weight of the packages to be handled in this way, bearing in mind the certainty that at some stage these will have to be handled manually, and particularly the advantages derived from shapes and sizes which will completely fill the pallet.

Some thought should also be given to the marking of packages so that they are easily identifiable during transport and in storage, making sure that the identification is such that it will still be legible at the time when the products are ultimately sold or used in further processing. I often wonder how much labour is used in turning—or even picking up—packages round in order to identify them, and, in the case of drums, how many have their identification on the circumference when they are stored or transported on the roll, and, alternatively, how many have their identification on the ends when they are stacked on end; more intelligence in this direction would save much labour.

Pallet Schemes

The palletising of warehouses has resulted in many instances in a 50 per cent reduction in the labour force, and a greater use of "air rights"—as the Americans describe it—has resulted in capacity storage being increased by 50 or even 100 per cent after allowing for the wider aisles generally necessary for working fork-lift trucks.

In many fork-lift truck and pallet schemes pallets cost far more than the equipment employed to handle them, and this has occasioned much thought as to the possibility of dispensing with the conventional pallet, with considerable success in some directions, of which I will quote two examples. First, some unit loads themselves may be built in such a way as to dispense with the pallet by providing the necessary cavities for the entry of the forks of the lift truck, and/or the fingers of the pallet truck. These unit loads are usually strapped, and commodities suitable for this treatment include ingots, carton-board and box-board.

Secondly, the squeeze clamp attachment to the fork-lift truck is another alternative to the use of

pallets. Whilst this method can be employed successfully within factories and warehouses, it has at the present time limitations in regard to throughout transit as it cannot be employed without leaving gaps between the unitised load which have to be filled by dunnage to ensure stability. Whilst some means may be found of loading open road vehicles in this way, it is not so easy to see a satisfactory solution for loading vans—either road or rail—by this method.

The Vehicle Floor

Whilst a great variety of equipment is available for reducing labour in the loading and unloading of transport units, such as the attachments which can be fitted for raising heavy packages from ground floor to road vehicle floor and vice-versa, movable floors and conveyors set into the floors of vehicles, a big step forward would be taken if a means were found to reduce the variation between the laden and unladen heights of road vehicle floors. Experiments being carried out by one of the well-known rubber manufacturers relative to a hydraulic system of suspension, which may provide the answer to this problem, will be watched with considerable interest. It would be a great advantage if the floor levels of road and rail vehicles could be more uniform than they are at present in order to facilitate transfer of goods.

There is still a large field for economy of labour in the loading of distributive vehicles—those used for distribution to retailers, wholesalers, merchants, catering establishments, institutions, and the like, and in the next few years I think we shall see an increase in the number of these which are mechanically loaded and unloaded. Tests recently made in the mechanical loading of distribution vehicles of 5½-ton capacity, each making up to 40 or 50 deliveries a day, showed that more than 50 per cent of the loading could be mechanised, reducing loading time from 45 to less than 15 minutes.

Shipping

Turning to shipping traffic, an example of what can be achieved in a port by mechanisation will be found in Nelson, New Zealand, where 200,000 tons is handled per annum, 86 per cent of this being dealt with by seven fork-lift trucks and an appropriate number of pallets.

At the port of Burutu, where a labour force of 650 used to handle 500,000 tons a year of imported general merchandise and exported primary produce, mechanisation has enabled a reduction of this number to 48 in the course of the last five years, not only saving considerably in labour costs, but also speeding up the handling in a way which is almost unbelievable.

The time is rapidly approaching when more ships will be designed to take advantage of the most modern material handling techniques. I understand that already consideration is being given to the construction of a ship with the mono-rail system to handle palletised cargo in the holds and 'tween decks; Canada Steamship Lines, Limited, has for some years conveyed palletised cargoes in specially constructed ships on the Great Lakes. There, because of a constant water level, it is more easy to arrange for cargo to be loaded through the sides of the ships, thus reducing the amount of cargo which has to be lowered through the conventional hatches. Whilst the cubical content of the cargo capacity has been reduced by 20 per cent, the savings in labour and the quicker turnaround more than compensate for that loss.

Containers

The use of containers as a means of reducing labour costs has not yet been exploited fully; in fact it is one of the most profitable directions for greater co-ordination between road and rail. In the United States they are experimenting with the Mobilvan system, which might well be examined to see whether it is possible, practicable and economical to design a van body suitable for, say, a 12- or 14-ton payload on a road vehicle which could be transferred, if necessary, by a large fork-lift truck (such as is used in the Mobilvan system) from road to rail and vice-versa, with the van body automatically centring and securing itself when the forks are withdrawn. If this method could be satisfactorily developed it would be preferable to the Piggy-back system which seems to be gaining in popularity on the other side of the Atlantic but which has the disadvantages that so much deadweight has to be carried by rail and that it is expensive from a labour point of view in that it takes an experienced team some time to anchor each unit to the rail frame. Additionally, of course, in this country the system would encounter difficulties arising from railway gauge restrictions.

Labour Relations

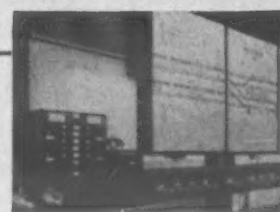
I could not conclude a talk of this kind without making some reference to what is probably the major problem in introducing any scheme which has the effect of changing the working conditions of the employees, particularly when the introduction of these schemes results in reducing the labour force. Whilst it seems most elementary to suggest that the best results are achieved by the earliest possible consultation with those likely to be affected, it is equally true that many schemes have been, and are being, resisted because of an unforgivable neglect to do this. Management has a big responsibility not only to give the longest possible notice of its intentions, but also to go to great lengths in explaining the reasons for them.

If redundancy is involved management should draw up a plan for dealing with it, and if the redundancy is such that natural wastage will take care of it then very little difficulty should arise, provided everyone understands that the reduction in the labour force will be secured in this way. If, however, this process is too slow, then the most equitable method for dismissal should be adopted, such as "last in first out," and, of course, as much notice as possible should be given to those who are to be dismissed. Obviously, the position will be helped considerably if satisfactory compensation arrangements can be agreed. The important point, however, is that all those who are likely to be affected should know as soon as possible what is going on and why, and an effort should be made to stimulate a lively interest in the project and to encourage in the reduced labour force a greater pride in their future job, which very often involves greater responsibility.

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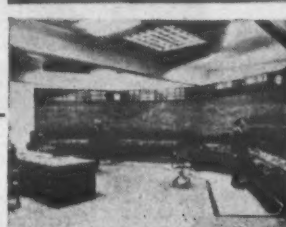


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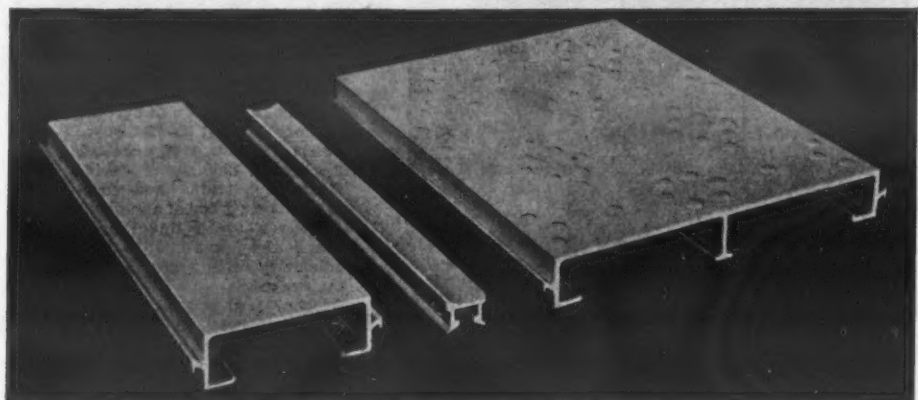
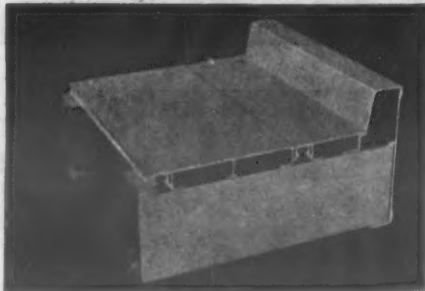
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*Abstract of a paper read to the Metropolitan Section, Institute of Transport, April 14.

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Belgian Road Construction

(Continued from page 3)

a penny; and a 20 per cent saving in time, equivalent on average to almost a penny a vehicle-mile. The gain from accident reduction is substantial in money and most important in avoiding human suffering. Observations made in Belgium during the last few years confirm American data which show that on access-controlled motorways, the number of accidents is lower by 70 to 90 per cent than on conventional public roads. Assuming the reduction is only 70 per cent and considering the total cost of accidents is of about £21 million for 600,000 vehicles travelling an average every year of 8,750 miles each, there results a gain of two-thirds of a penny per vehicle-mile. The total benefit per vehicle-mile derived from all the above savings thus amounts to about 3d. a mile. The average daily volume at which the financial cost of constructing and servicing a motorway is equalled or exceeded by the benefits gained by traffic in using the motorway relative to using the old ordinary road is consequently roughly 4,000 vehicles.

New Road Fund

The construction of the total mileage planned in the motorway programme, the total cost of which is estimated at £178 million, will take from 20 to 25 years. This amount is for motorways only. A fundamental requisite for their construction is the continuing availability of sufficient funds. The Belgian Government and the Parliament therefore created on August 9, 1955, an autonomous road fund which is to construct part of the total motorway programme and deal with other road works in a 15-year period for a total amount of £215 million.

Belgium is not only building its rural motorway system, but has also started with the construction of urban motorways in Brussels. The nucleus of this urban motorway system in Brussels is made up of a series of grade-separated intersections on the inner ring-road boulevards, in combination with the provision of express and local roadways and of separate rights of way for tramcar operation. This will allow mass transport to provide better service, which is vital for its customers and may eventually check or reverse the trend towards the use of private cars for the journey to work and for shopping.

Brussels Urban Motorways

The works on the inner ring-road, the Avenue Louise and the Boulevard Leopold II, affect over five miles of roads with total widths of from 150 to 250 ft. About 600,000 sq. yd. of surface have been laid, including the surfaces of the local and through-lanes, parking lanes and pavements. The cost of the inner ring-road amounts to about £7 million. The cost of the rest of the urban highway building that is due for completion before the opening of the 1958 exhibition amounts also to about £7 million. The roads concerned are sections of the outer ring-road, of the peripheral motorway link between the motorways to Ostend and to Antwerp, of a section of the Brussels-Antwerp motorway proper, of urban radial arteries leading to the exhibition grounds and of related intersections and interchanges.

Savings in time and in cost of operation and the

increase in the capacity of the road system are such that the construction costs of the facilities will be paid back in a very short time, calculated to be of a maximum period of 5 to 10 years. Volume counts indicate that the saturation of the express roadway at the signal-controlled intersections on the inner ring-road is already being reached. This makes essential the building in the near future of the projected tunnels at the remaining level intersections in the network. It is obvious that maximum benefit from the facilities will only be obtained when the whole scheme of tunnels is completed so that an homogeneous and continuous urban motorway is made of the inner ring-road. At a point between the Rue de la Loi and the Place Madou daily traffic already averages 42,000 vehicles.

Improved Flow

Another important consideration in the usefulness of the tunnels is the higher average speed of traffic that results from the continuity of movement. An average speed of 35 m.p.h. is observed in road sections with continuous flow, while the average speed in road sections without continuous flow drops to low values of 20, and even 10 m.p.h. It is recognised that urban economy and urban living in the Brussels area have come to depend upon urban super-highways as much as upon any single utility, and this should be true for every important city in the world. There is no doubt about the fact that Brussels is gaining considerable attractiveness and prestige in establishing her present leadership in providing herself with an adequate urban road system.

RAILCAR PROGRESS

Self-Changing Gears Book Reprinted

DEMAND for the booklet *Railcar Progress Around the British Isles*, published by Self-Changing Gears, Limited, Lythalls Lane, Coventry, and reviewed in MODERN TRANSPORT for October 26, 1957, has been so great that the company has had to order a reprint in order to meet requests still coming in. More than 3,000 copies have been distributed by Self-Changing Gears in the past three months. Requests have been received from Great Britain and from most countries overseas, including the United States of America, South Africa, Australia, New Zealand, India and Italy.

Analysis of the requests shows that about 80 per cent originate from railway operators and employees and the balance from manufacturing concerns, technical colleges and individuals with an interest in railways. Among the important educational and official establishments which have asked for the book are Harvard University, U.S.A., Indian Railways Staff College, the Technical University of Budapest and the British Motor Industry Research Association.

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International City on the Heysel Plateau

FIFTY NATIONS IN FRIENDLY COMPETITION

SINCE our own great international exhibition in Hyde Park in 1851, British has shown only lukewarm interest in similar events organised in various parts of the world. It is therefore the more encouraging to national pride that the challenge presented by the Brussels Universal and International Exhibition 1958 has been taken up so enthusiastically by the Government, the arts and sciences and by industry generally to provide displays in the purely British section and in the various international presentations that are worthy of this nation's traditions and achievements.

Unlike trade fairs or exhibitions, parochial or international, which are fundamentally commercial in character or designed to enhance national prestige, the purpose of an exhibition such as that now open in Brussels is to bring together the nations of the world to display in friendly competition and not for sale their achievements in the service of mankind in the eternal striving for a better world. Specifically, nations were asked by the organisers to link their exhibits at Brussels with the general subject "Man" and the overriding aim has been to show the interdependence of all peoples of the world and to create a climate in which co-operation, friendship and peace can flourish.

600-acre Site

The Brussels Exhibition, which opened on Thursday this week and will continue until October 19, occupies a 600-acre site on the outskirts of Brussels which embraces the Heysel Plateau, Ossegem Park and the extensive and imposing Palais Du Centenaire, the Brussels permanent exhibition buildings. The impressive execution of this gigantic project within the time allowed is itself a tribute to the organisers and the participants, and the arrangements for housing and handling the anticipated 40-50 million visitors during the six-month run appear to be sound and adequate.

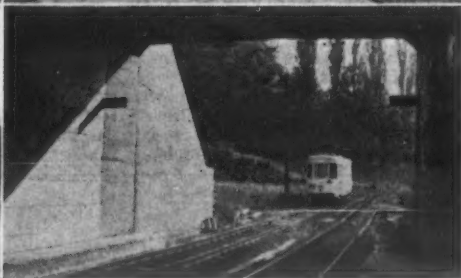
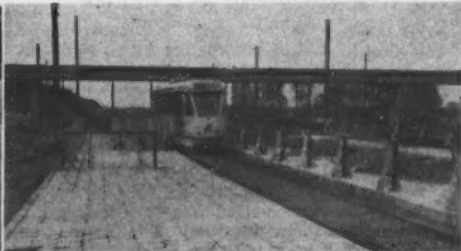
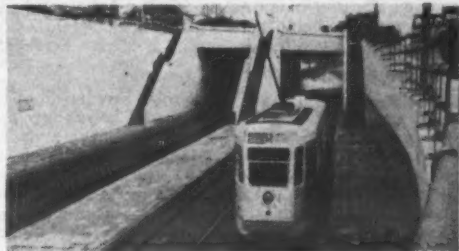
To the 12,000 beds available in Brussels hotels have been added 10,000 in private houses and a minimum of 3,000 in schools and institutions,

of Annigoni's portrait of the Queen, replicas of the crown jewels and life-size models of national figures, directly into the industrial present of the Hall of Technology. Here are displayed a half-size model of Zeta, a model of the giant Jodrell Bank radiotelescope which was used to track the orbit of the Russian earth satellites, a heart-and-lung machine from the Hammersmith Medical School, a diorama of the Dounreay breeder reactor and a Rolls-Royce Dart turboprop aero engine.

On entering the British Industrial Pavilion, where there are about 500 exhibits, the visitor is reminded by appropriate display of the vehicles concerned that Britain is the only country to have held simultaneously the official world land, water and air speed records. Emphasis is also laid on other pioneering achievements; in the field of aero turbines, where the lead is still held and British turboprop engines have been the only ones in airline service for four years; in radar and electronics, in which there has been a dramatic expansion of exports in recent years; and in nuclear energy, for which power-generation reactors actually on the market are displayed.

Collective Exhibits

Under the title "Power For Progress," the work and achievements of all sections of the British electrical and allied industries are well shown on a 5,000 sq. ft. stand. This collective effort, which has been sponsored by all the relevant associations headed by the British Electrical and Allied Manufacturers' Association, illustrates in three large chambers of energy the story of the generation of electricity and compares the use of conventional fuels with the new atomic stations and hydro-electric schemes. Electric traction on road, rail and sea is covered by scores of models, with electric locomotives appearing in the liveries of operators in many parts of the world and the many uses of electricity in industry and the home are graphically illustrated. The growing place of electronics in industry, navigation and medicine is explained in a number of animated displays and over the



Trams serving the Brussels Exhibition: Above, Brussels Tramways cars at the station outside the exhibition grounds and, right, at the extensive terminus at Palais Du Centenaire; below, Vicinaux trams on services S and L entering tunnels passing under the exhibition grounds

while for visitors arriving in their own transport, an additional 11,000 beds are provided by motels and 22,000 in tented camps and caravan sites. At peak holiday periods, additional accommodation will be utilised in the adjacent countryside. Modern and realistic preparation for the great influx of road traffic has included the building of a comprehensive system of motor roads covering all Brussels, which we describe elsewhere in this issue, the benefit of which has been enhanced by the recent completion of the Brussels-Ostend motorway. Normal urban transport to and from the exhibition has been improved by the refurbishing of the two Centenaire tramway stations and special inclusive travel and booking arrangements have been arranged by Belgian National Railways and Sabena (Belgian Airlines).

Inside the exhibition, which is so extensive that it has been calculated that it would take a fast walker three and a half days to see it all, even cursorily, a system of cable cars or chair lifts has been established 20 ft. or so above the ground, the larger buildings are equipped with lifts and escalators and there is a helicopter station and internal trailer bus services.

Peaceful Atom

Situated at the heart of the exhibition and providing a focus for visitors is the dominating Atomium. Rearing to a height of about 350 ft., it consists of an arrangement of nine light alloy-faced spheres, each 59 ft. in diameter, interconnected by steel tubes 10 ft. in diameter, set in the centred-cubic form to symbolise an elementary iron crystal. Of the spheres, which represent the nine atoms of a crystal and have exterior lighting to represent the atomic electron orbits, the lower ones house exhibitions of peaceful uses of atomic energy and the upper ones form a restaurant and vantage points from which to view the exhibition. A fast lift is installed in the central column and there are escalators in the other interconnecting tubes.

In the Atomium, exhibitions are arranged on an individual national basis but in many of the other halls, the general programme has been decided by mutual agreement between the exhibitors to present a collective and impersonal display of international progress in the various fields covered. This is so in the international science hall—Hall VI of the Centenaire—where 30 countries have combined to show in non-technical terms a summary of present knowledge in the various fields of science. This exhibition is separated into four divisions representing physics, chemistry, solid physics and biology and includes 40 British items shown with hundreds of others to illustrate the special themes.

The British Pavilion is in fact two separate exhibitions, that promoted by the Government, to finance which a sum of £400,000 was allocated, and the other sponsored by the Federation of British Industries, on which industry has been permitted to spend £2½ million. In the Government Pavilion, the visitor passes from the Hall of Tradition, housing in its rich interior a 12-ft. reproduction

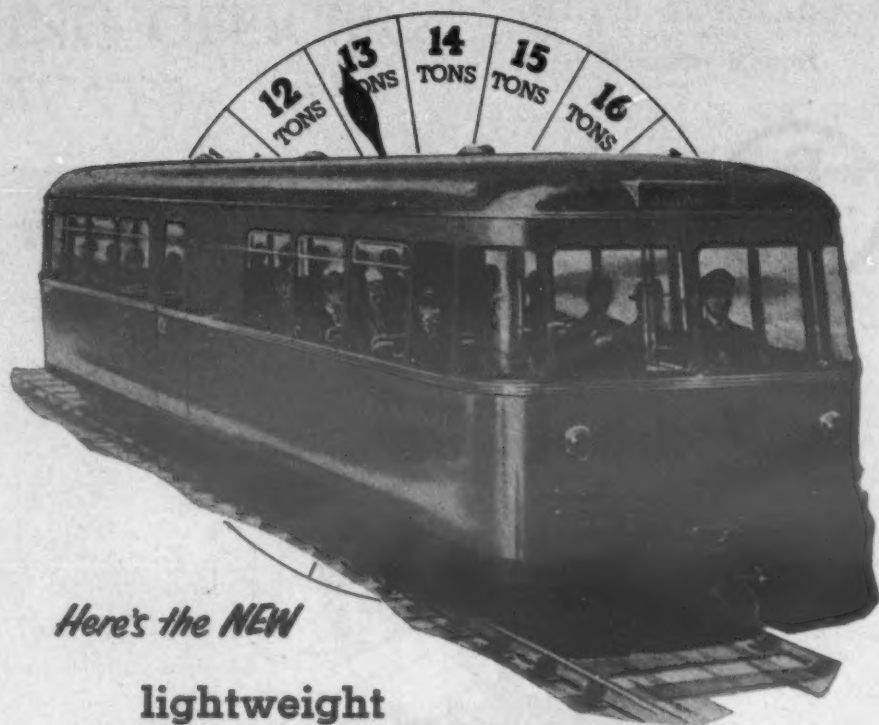
whole stand, the emphasis is on the part of British industry in overseas development.

A different kind of collective stand is that organised by the Birmingham Exchange and Engineering Centre, which typifies that body's policy of publicising British industry overseas. The group stand carries the products of more than 80 manufacturers representing most branches of light and medium engineering. Facilities provided by the centre have included design and construction of display material conforming to an overall design scheme, transport and Customs facilities and staffing the stand throughout the six-month run, thus enabling many smaller firms to be represented at the exhibition who would otherwise have found cost and staffing problems prohibitive.

Power for Transport

Among the individual displays, Rolls-Royce, Limited, presents Rolls-Royce power—on land and sea and in the air, illustrating the company's unique position in this field. Four different types of aero turbine available for civil operation—the Dart, which for nearly four years in the Vickers Viscount was the only turbine in airline service, the turboprop Tyne and the Avon and Conway bypass turbojets are displayed and are linked with the names of major airlines which have specified them for transport aircraft. Petrol and diesel engines used extensively in military and civilian road vehicles, industrial plant, ships and railway vehicles are also shown and reference is made to the nuclear reactor Neptune, already in operation at Harwell, designed by Rolls-Royce with Vickers and Foster Wheeler for submarine propulsion.

The English Electric-Babcock and Wilcox-Taylor Woodrow Atomic Power Group display deals with the design and construction of the 500,000-kW Hinkley Point atomic power station and point is made of the fact that it will have a 30 per cent greater output of power than the highest recorded consumption of the whole city of Brussels. As well as contributing largely to the joint stands, English Electric also provides power supplies to the two British pavilions from the exhibition ring main through two English Electric substations, one of which is enclosed in glass to form a working exhibit. Transport is covered by 11 locomotive models, including the powerful Napier-engined Deltic, and the Napier Gazelle helicopter turbine is shown on the British Iron and Steel Federation stand. Scale-model locomotives on the joint stand also form part of the two displays of Metropolitan-Vickers Electrical company, which also shows a working model of a turbine-generator and a transmission and distribution model. Two products of Metropolitan-Vickers-G.R.S. for railways are a four-aspect searchlight signal and a multi-lamp route indicator, there is an oil painting of the A.E.I.-John Thompson nuclear power station now being built at Berkeley, which will employ four Metrovick 80 M.W. turbine-generator sets, while in the Hall of Science there are a mass spectrometer and a high-frequency plastics-welding machine.



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North Eastern Region Stations Closing

Passenger-train facilities will be withdrawn from Alne, Raskelf and Pilmoor stations in the North Eastern Region on and from May 5. Fyling Hall Station will be converted into an unstaffed halt.

Transport Takings Cut by Cold Easter

Bad weather during the Easter holiday caused a drop of about £250,000 in British Railways and B.T.C.-owned bus and coach undertakings, compared with a normal Easter.

Road Traffic Census Results

Motor vehicles counted on trunk and class 1 roads during the day and evening in England and Wales in the M.O.T. traffic census taken in August last year were 4 per cent more than in the corresponding week in 1956. Cars showed an increase of 5 per cent but light goods vehicles were 2 per cent fewer. The fewer number of buses and coaches was also slightly less.

Drypool Bridge in Hull Going

Drypool Bridge over the River Hull is to be replaced by a Scherzer rolling lift bridge estimated to cost £800,000, towards which the Minister of Transport has made a grant of over £588,000. The present bridge, a swing bridge built of wrought iron in 1888, is worked by hydraulic power and its roadway width of under 16 ft. does not allow two large commercial vehicles or two 8-ft. wide buses to pass each other.

G.N.R. Loss Reduced

For the year ended September 30, 1957, the Great Northern Railway Board sustained a loss of £1,081,748, a reduction of £96,139 on the previous year. The volume of passenger traffic by rail increased by 9½ per cent and by about 5 per cent on the road side. Revenue increased by 4 per cent overall, almost entirely due to the Suez restrictions on fuel usage. Road freight traffic and receipts fell off considerably, except for livestock.

Minor Railways Charges

The Minister of Transport has now made two orders authorising independent railway undertakings, other than those whose railways lie wholly within a dock, to levy charges for the carriage of merchandise by rail in accordance with the B.T.C. railway merchandise charges scheme, 1957, and those independent undertakings which carry passengers to charge the fares authorised by the passenger charges scheme, 1957.

Second Section of Birmingham Ring Road

A contract will probably be let during the summer for the construction of a further length of the Birmingham inner ring road. The first section, started last March, is between Bristol Street and New Street Station; the second section will radically alter the face of the well-known Bull Ring area of Birmingham, famous for its street trading and Market Hall. It will cost nearly £1½ million and will be 400 yd. long with a carriageway 40 ft. wide extending onwards from New Street Station (Queens Drive) to Carrs Lane, crossing High Street and following the alignment of Moor Street.

Multi-Storey Garage Plan in Glasgow

A Glasgow garage owner has applied to Glasgow Corporation planning committee for permission in principle to build a multi-storey car park and service station to accommodate 300-400 cars in Coburg Street, on the South Side near Glasgow Bridge.

Car Sleeper Trains from Sutton Coldfield

Overnight trains for cars, with sleeping-cars for their passengers, are to run from Sutton Coldfield to Stirling this summer. It is announced by the London Midland Region. The trains will leave Sutton Coldfield at 9.35 p.m. every Sunday and Wednesday from June 1 to August 31, returning on the following days.

Rebuilding Tewkesbury Bridge

Work has started on a scheme, estimated to cost about £180,000, for improving the two bridges, known as King John's Bridge, which span Mill Avon and the Old Avon at Tewkesbury. Carrying A38, the Exeter-Leeds trunk road, it is now believed to have been built by Peter of Savoy prior to the ascension of King John to the throne in 1199.

Keadby Canal Bridge Replaced

A new swing bridge over the Sheffield and South Yorkshire Canal at Keadby Lock, near Scunthorpe, was officially opened on April 1. Electrically operated, it is a welded-steel structure 64 ft. long and 25 ft. wide, providing a dual carriageway. It opens up a shorter route for heavy traffic from North-West Lincolnshire into South Yorkshire. A much longer route, via the Grimsby-Doncaster trunk road, has had to be taken by heavy traffic for the past 10 years.

Tamar Bridge Loan Approved

The Minister of Transport has agreed to support an application for the raising of a loan to carry out preliminary work for a bridge over the River Tamar to link Devon and Cornwall. This will not, however, alter the priority rating of the scheme. In reaching his decision he states that he has been influenced by the desirability of having in reserve against a sudden emergency a number of road and bridge schemes in an advanced stage of preparedness against unemployment in the area.

Two More London Road Grants

A grant of £950,000 to London County Council will enable work on the second stage of the Elephant and Castle improvement scheme to be commenced. The cost of the whole scheme is estimated at £1,476,000, of which the Government is paying over £1,100,000. This second stage provides for a roundabout at the main junction of Newington Butts, St. George's Road, London Road, Newington Causeway and New Kent Road with pedestrian subways on all roads. Elsewhere in London, the prewar scheme for a short length of new road, connecting the north end of West Ferry Road, at its junction with Garford Street, with West India Dock Road, where it is joined by Mandarin Street, in Poplar, is to be commenced. This will cut out the sharp corners at either end of Garford Street.



Latest addition to Pressed Steel Company Limited British Railways production: new 58 ft. gangwayed Standard Brakevan.

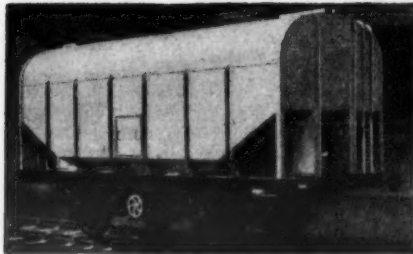
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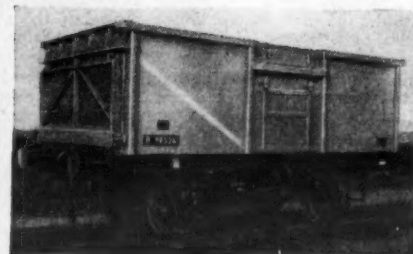


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COMMERCIAL AVIATION

Air Ghana

RATMALANA RECURS

It was officially announced in Accra on April 14 that the Ghana Government has decided to set up Air Ghana, with the co-operation of the British Overseas Airways Corporation. The Government recently consulted a number of major airlines which submitted proposals. The Ghana Government considered these and decided that those of B.O.A.C. were the most suitable. Ghanaians will be trained to take over eventually, and Air Ghana will operate both internal and international services.

Pan American Cargo Record

Pan American World Airways stood number one among the world's airlines in terms of cargo ton-miles flown in 1957, it has been announced by Mr. Willis G. Lipscomb, vice-president, traffic and sales. It flew 96,595,000 ton-miles of cargo in 1957. A large part—42 per cent—of this record ton mileage was carried in freight aircraft. These are routed throughout the Caribbean, Central America and down to Buenos Aires, and make 12 transatlantic crossings a week serving London and cities on the Continent. The balance was carried on passenger flights.

Boeing to Take Back B.O.A.C. Stratocruisers

The British Overseas Airways Corporation is planning to replace all its Boeing Stratocruisers with Britannia turboprop air liners, and is selling 14 of the Stratocruisers back to the Boeing Airplane Company. Two more Stratocruisers will be sold on the open market. A substantial proportion of the Stratocruiser fleet has latterly been maintaining the B.O.A.C. and West African Airways Corporation services between London and West Africa and some will continue to be used on that run for a while. The Monarch de-luxe service between London and New York and flights between London and the West Indies are at present scheduled as Stratocruiser operations. The arrangement with the manufacturer has regard to the B.O.A.C. order for 15 707 jet air liners.

U.S. Certificate for Britannia

The Bristol Britannia has been given a United States type certificate clearing it for use by an American airline. It covers the five aircraft ordered by Northeast Airlines. These are Britannia 305s, powered by four Bristol Proteus 755 turboprop engines. N.E.A. was to have taken delivery of the first last autumn, but delivery was postponed, however, owing to the exceptionally large number of modifications—over 100 in all—required by the Civil Aeronautics Authority before the aircraft became acceptable for operation internally in the U.S. These modifications have now all been satisfactorily incorporated. Northeast is expected to take delivery of the first aircraft soon in order to proceed with crew training and route proving, and it will receive the remainder in time to begin services between Miami and New York in the autumn. Canadian Pacific Airlines has now taken actual delivery of its first Britannia.

Still Trouble at Ratmalana

About Rs500,000 is being spent on repairs to the runway at Ratmalana airport. The repair job is nearly half-way through and considerable expense and inconvenience has been incurred in making a temporary shift to Katunayake. The question arises, however, whether the airlines now operating through Katunayake will return to Ratmalana. B.O.A.C., it is reported from Ceylon, has decided that it will not, on the grounds that repairs at Ratmalana are inadequate. Airlines operating through Ratmalana are agitated for the re-metalling of the runway, but the surface has not even been repaired prior to laying on the premix. The scheme to concrete a few feet on either side along the entire length of the runway, which was to be effected in the present repair operation, has been abandoned. The last 1,000 ft. of the present runway, which was condemned as having an unsound foundation, is also left untouched but will be covered over with premix. It was said that this section was to be relaid, but now it has been found that the money is not sufficient for any such work.

New B.E.A. Aberdeen Offices

British European Airways opened a new sales and reservations office and town terminal in Aberdeen on April 8. The premises are at 335-337 Union Street, and replace the offices which the corporation has occupied at the Aberdeen Joint Station since 1947. The change is the result of the astonishing growth in the past few years of passenger traffic at Aberdeen. The scale of the expansion is underlined by the following figures relating to passenger handling there:

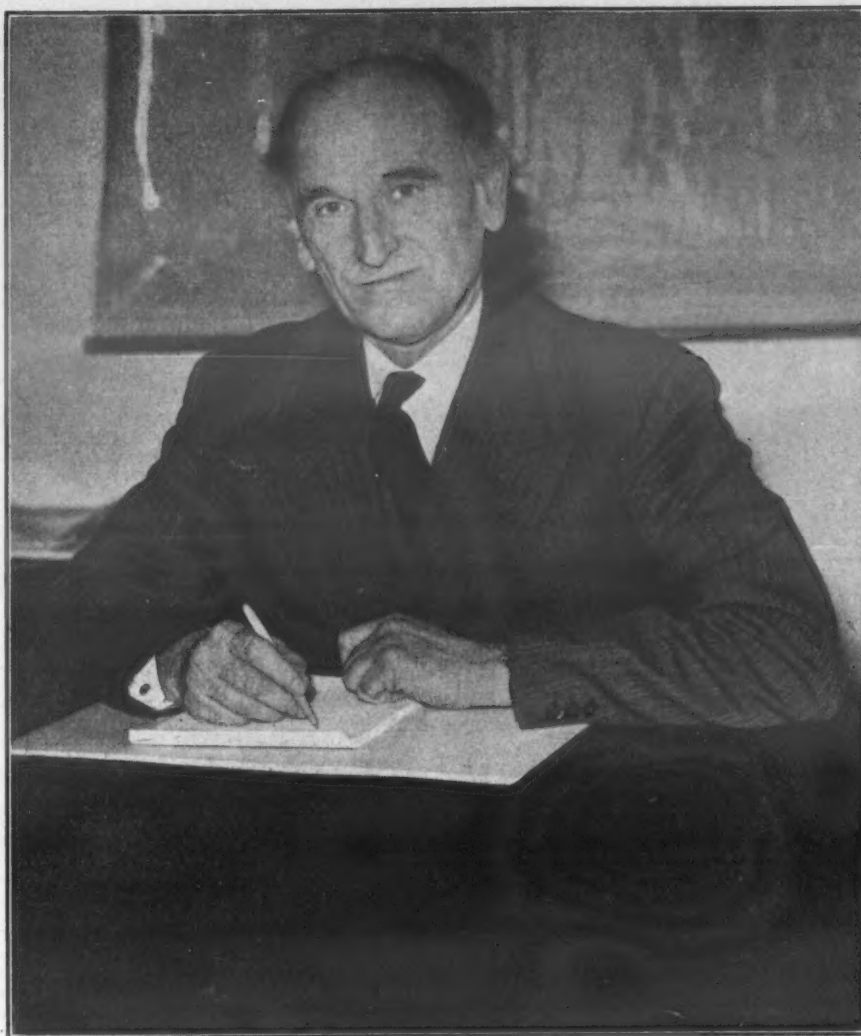
1951-52	..	..	13,000
1952-53	..	..	15,000
1953-54	..	..	10,000
1954-55	..	..	22,000
1955-56	..	..	27,600
1956-57	..	..	30,500

This increase continues and for the current financial year it is estimated that the total will be more than 33,000. An important feature is the new automatic branch telephone exchange which has been installed and which, without a manual switchboard, connects a caller directly with a sales clerk and reduces delays to a minimum. This telephone system is claimed to be the first of its kind to be installed in any airline reservations office.

Swissair Freight in 1957

Swissair achieved in 1957 a 33 per cent increase in freight traffic over 1956. Freight tonne-kilometres performed totalled 15,812,244 against 11,852,095 and the 1957 figure was slightly more than the total for the six years 1948 to 1953. The freight carried amounted to 12,372,622 kg., an increase of 19 per cent over the 1956 figure, and North Atlantic freight traffic accounted for 1,144,438 kg., or 14.5 per cent more than in 1956. Within Europe the volume of freight carried by Swissair rose by 37 per cent and to and from the Middle East by 39 per cent. Freight and mail together accounted in the past year for over 20 per cent of total traffic. The expansion in freight traffic was made possible by the sharp increase last year in offered capacity. This amounted to 53 per cent over 1956, largely because of the opening of the Far East route, the extension of the South America flights to Buenos Aires together with the doubling in frequency, and higher frequencies on the North Atlantic and in Europe. To cater for the continuing heavy demand for cargo space between Europe and North America, Swissair has ordered a Douglas DC6A freighter with maximum payload capacity of 13½ tons. From next autumn this aircraft will operate two return services weekly on the North Atlantic.

CHIEF INSPECTING OFFICER OF RAILWAYS



C. A. Langley

Brigadier C. A. LANGLEY, C.B.E., M.C.,
M.Inst.T., R.E. (Retd.)

• • • • •

Appointment of Brigadier Charles Ardagh Langley as Chief Inspecting Officer of Railways, Ministry of Transport, in succession to the late Lieut.-Col. G. R. S. Wilson, has already been recorded in MODERN TRANSPORT. He has for the past eleven years been an Inspecting Officer of Railways and has been in particular concerned with electrification, tramway and trolleybus work. Educated at Cheltenham College and the Royal Military Academy, Woolwich, he was commissioned in the Royal Engineers in July, 1915, and went to France in February, 1916, where he served for the rest of the war in a field company and later as adjutant to the divisional engineers. He was awarded the M.C. and Bar and was mentioned in despatches three times. After the war he underwent a course of higher military engineer training, including one year at Cambridge University, and on completion he was posted to the Railway Training Centre, Longmoor, in September, 1922, where he served with the railway troops for the next five years. During this period he was attached to the Southern Railway for one year's training. On being posted to India in December, 1927, he was seconded to the Great Indian Peninsular Railway until his return home in February, 1933. He was employed largely on works in connection with the electrification of the Bombay-Poona main line, including the construction of the power station at Kalyan. On his return to England, Brigadier Langley was again posted to the Railway Training Centre, Longmoor, where he was appointed an Instructor and later Chief Instructor of Railways. Amongst other activities he wrote a number of military text books on transport, and he initiated the design and development of the military steel trestles and bridges used extensively during the 1939-45 war. During the early stages of this war, he was responsible for transportation developments in the Middle East; he was then transferred to India, where he formed a transportation training centre for raising and training the docks and inland water transport troops of the Indian Engineers. On the formation of South-East Asia Command in 1943 he was appointed Deputy Quartermaster General (Movements and Transportation) and was responsible for the control and development of the transport requirements of this Command. He remained in charge until December, 1945, when he returned to England to take up the appointment of Commandant, Transportation Training Centre, Longmoor. For his services during the war he was awarded the C.B.E. and mentioned in despatches. He retired from the Army in October, 1946, on his appointment as Inspecting Officer of Railways, Ministry of Transport. In 1954 he accompanied the late Colonel Wilson on his visit to France to see the latest methods of railway electrification on the French National Railways, and last September he flew out to Jamaica to act as assessor to the commission of inquiry set up to investigate the serious accident on the Jamaica Government Railway.

THE RAIL AWARD

A Minority Report

B.T.C. CHAIRMAN'S STATEMENT

By a majority decision the Railway Staff National Tribunal rejected the claims of the railway unions for higher pay and shorter hours. Sir John Forster, chairman of the Tribunal, and Mr. A. J. Espley, who was nominated by the B.T.C., agree that the present basic rates of pay are low compared with those in other nationalised industries and certain private undertakings, but that because of the commission's deficits for 1956 and 1957 they feel unable to recommend any increase of wages at present.

Mr. E. Hall, who was appointed to the tribunal on the nomination of the unions, says that he cannot agree that the deficits should be partially recouped "through the worsening of the standard of living of the employees of this undertaking." He suggested that the purchasing power of wages and salaries covered by the claims should be restored to the level of March 19, 1957 (the date of the previous pay settlement), and that the commission and the unions should discuss the question of basic wages in relation to those for similar grades outside the railway industry.

Competition and Charges

Having reviewed the financial state of the Commission, the award points out that competition on both the freight and passenger side is proving "fierce" and, in consequence, the advisability of again raising freight charges, which were last raised in August, 1957, or passenger fares, which were raised last September, is open to serious question. If, however, it were to be held practicable and commercially prudent to obtain additional receipts in 1958 from higher charges, these would be needed, the tribunal was informed, to keep the 1958 deficit within the maximum limit originally contemplated, at the present level of costs, and would not be available for meeting increased costs whether for wages or anything else.

"Increases in salaries and wages at the present time could, we are informed, only be met by drastic and damaging curtailment of the commission's activities and services beyond those contemplated in its review and this, it was claimed, would be contrary to the interest of the railways, and the staff who served them, and contrary, too, to the interest of the customers and of the country.

Modernisation Prospects

"The modernisation plan which is now being implemented is both bold in conception and comprehensive in application, and is already producing a resurgence of the pride and interest which was an outstanding attribute of railway staff. It is felt that results which should flow from its implementation will develop a service of which the nation and the staff will be justifiably proud, and the staff, as has been indicated to us by the commission, should share in the benefit which may be expected to accrue from the plan both financially and in their conditions of service.

"The evidence before us shows that the basic rates of staff covered by the present claims are low in comparison with those cited to us as applying to other nationalised industries, public services and certain private undertakings.

"It is impossible for us to forecast what may be the order of the annual deficits which will be incurred by the commission this year and in the years up to 1962. But in the light of the circumstances outlined, and of the fact that to cover deficits incurred up to 1962 the commission is, by statute, prevented from borrowing a sum in excess of £250 million, against which sum it has already been compelled, or will be compelled, to draw sums which together will exceed £110 million for 1956 and 1957, we feel ourselves unable to recommend an increase of wages at the present time."

Minority Report

In his minority findings Mr. Hall states that the tribunal unanimously accepted evidence showing that the basic rates of the staff covered by the present claims were low compared with rates applying in other nationalised industries and certain others. It was not disputed by the commission that there had been an increase in the cost of living; the only difference between the parties on this heading was on the amount.

After drawing attention to a paragraph in the White Paper which said that the successful operation of the commission's undertaking and its prosperity were dependent in high degree on the efficient and willing co-operation of the staff, he adds: "I cannot accept the view that the deficits incurred by the commission in their attempts to modernise and subsequently reorganise the British railways should be partially recouped through the worsening of the standard of living of the employees of this undertaking."

Having given the reasons why he feels justified in dissenting from the majority report Mr. Hall recommends: (1) The immediate restoration of purchasing power of wages and salaries covered by this claim to the same level that obtained following the twentieth award, dated March 19, 1957. (2) The tribunal having accepted that the basic wages are low in comparison to similar grades in other nationalised industries and public services, the contending parties should meet again in an endeavour to resolve this problem, using the rates as submitted to the tribunal as a basis for settlement.

The tribunal unanimously rejects a separate application by A.S.L.E.F. for a 40-hour week to be substituted, without reduction in pay, for the 88-hour fortnight now applicable to drivers, motor-men, firemen, and other shed staff.

B.T.C. Chairman's Statement

In a statement issued within 24 hours of publication of the award, Sir Brian Robertson, chairman of the B.T.C., pointed out that the unions had asked for an increase partly to offset the rise in the cost of living and partly on the ground that the railway pay was generally lower than for comparable work elsewhere. The commission had contested that an increase was justified for either reason at present, but had stated that, in any event, they could not afford to increase wages at this time. The tribunal had upheld this and the unions were understandably disappointed, but their good sense should induce them to deal calmly with the situation.

No proposal to increase wages should be expected, said Sir Brian Robertson. But he did not care for expressions such as the "wages battle" in connection with this problem or that of the London busmen's pay. Co-operation of the staff was essential to the success of the commission's business, and there had been a degree of co-operation.

(Continued on page 14)

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SEA LINKS WITH THE CONTINENT

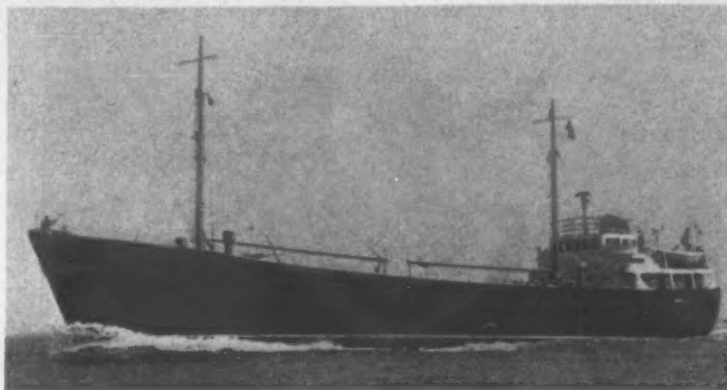
14—The John Cockerill Line*

THERE is a number of shipowners operating cargo services between London River and ports in Belgium and most of these are British-owned. Antwerp, Brussels and Ghent are regularly served from various berths within the Port of London. Of the Belgian owners S.A.

United Kingdom and Belgium for almost 70 years.

The U.K. loading berth is 28 Shed, Tilbury Dock and goods can be delivered to this dock either by barge, rail or road. For provincial exporters the railways collection and delivery facility is available, thus reducing considerably

These vessels are all tween deckers and a fifth vessel of the same type is expected in the early summer. All types of general cargo can be handled and the tween decks ensure that damage to vulnerable traffic, such as motor cars and perishable cargo, can be avoided. The vessels are so con-



The m.v. "Diamant" was, until the delivery of "Rubis," the newest vessel on the Anglo-Belgian services of the John Cockerill Line

Cockerill-Ougrée, Seraing, Belgium—the John Cockerill Line—maintains a service for general merchandise between the Continent and the United Kingdom and vice-versa via Antwerp and Tilbury and via Ostend and Tilbury. This line has, moreover, been operating on sea routes between the

f.o.b. charges. In London goods can also be handed in or collected at the Commercial Road depot of British Railways. Where convenient to importers or exporters direct delivery or collection can be made at Tilbury. Four of the Cockerill fleet of vessels have been built within the past five years, the last two being the motor vessels *Diamant* and *Rubis*.

*No. 13 appeared January 25.

M.V. "RUBIS"

Date Built	1957
Gross tonnage	International Rule 574.49 Belgian Rule 590.28
Net tonnage	International Rule 366.02 Belgian Rule 415.32
Deadweight tonnage	619 tons (Salt) 597 tons (Fresh)
Length	55.90 metres (183 ft. 6 in.) Between Perp. 50.50 metres = 165 ft. 8 in.
Breadth	8.05 metres (26 ft. 5 in.) (2.95 metres = 9 ft. 8 in. to Middle Deck)
Depth	4.95 metres (16 ft. 3 in.)
Draught	Freeboard 3.49 metres (11 ft. 6 in.)
Derrick lift	5 tons; 2 tons
Cargo Capacity	
Hold	Frames Length Grain Bale
Lower	Metres Cu. Metres Cu. ft. Cu. Metres Cu. ft.
Upper	20.70 31.00 389.8 13,751 368.5 13,005
Frigo	20.57 22.94 610.7 21,205 588.3 20,775
Total	57.73 8.06 86.1 3,040 79.7 2,815
	1086.6 37,996 10,365 36,995
Hatches	
No. I	12.4 metres x 5 metres (40 ft. 7 in. x 16 ft. 4 in.)
No. II	12.4 metres x 5 metres (40 ft. 7 in. x 16 ft. 4 in.)
Tween Deck	
No. 1	6.2 metres x 6.2 metres (20 ft. 3 in. x 20 ft. 3 in.)
No. II	13.64 metres x 6.2 metres (44 ft. 7 in. x 20 ft. 3 in.)
Frigo	6.02 metres x 3.2 metres (19 ft. 7 in. x 10 ft. 5 in.)
Speed	13 knots
Officers and crew	12
Engine	MAK Four-stroke

structed that some 65 cars can be carried per voyage. Two of the existing ships have refrigerated holds and the new vessel will be similarly equipped. All vessels have radar, echo sounders and radio telephones.

From Tilbury the Belgian service comprises sailings to Antwerp each Tuesday and Thursday and to Ostend on at least three days per week. Departures from Antwerp are on Wednesdays and Saturdays and from Ostend daily from Sunday to Thursday inclusive. Whilst perishable traffic from Italy, France and Belgium is on offer the vessels report for working at Tilbury at midnight, thus enabling very early delivery of fruit, vegetables and fish to be made to the appropriate markets.

Continental through traffic is shipped on the Ostend service, where it connects with groupage services to Brussels and to Basle. All transit traffic is discharged straight on to outgoing trucks and delivery is made to Brussels the day following arrival at Ostend and at Basle on the day after.



Perishable cargo stowed tween decks on a John Cockerill ship

From Basle road deliveries are made throughout Switzerland.

Offices are maintained at the ports, the Antwerp address being 3 Goudbloemstraat, Antwerp, with loading at Quay 15A on the river. At Ostend the address is Avant Port, Ostend, whilst the London (City) office of the John Cockerill Line is at Ibex House, Minorities, E.C.3. The Tilbury office is at 28 Shed, Tilbury Dock, and in addition there is the Commercial Road depot of British Railways as mentioned earlier.

With the strategic value of distance and tide at the Tilbury terminal coupled with the serving of Ostend as well as Antwerp, the John Cockerill Line is well placed to continue to serve the needs of traders of Belgium and the United Kingdom, as it has done for more than two-thirds of a century.

CLASSIFIED ADVERTISEMENTS

SITUATION WANTED

ACTIVE A.M.Inst.T., Master Mariner, Lt. Cdr. R.N.R. (38), seeks shore job with transport interest; present salary £980 per annum. Box No. 3789, MODERN TRANSPORT, 3-15 Woburn Place, London, W.C.1.

CHAMOIS LEATHERS

GUARANTEED hardware Chamois Leathers. Approximately 22 in. by 16 in.; only 6s. 11d. each (minimum order six); 1 kip (30) less 5 per cent.—County Chamois Co., Limited, Rocky Lane, Aston Cross, Birmingham.

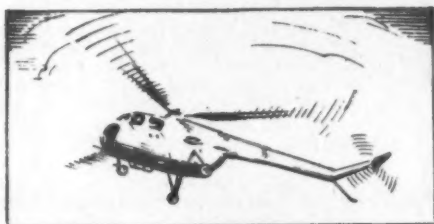
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MANCHESTER CORPORATION

TRANSPORT DEPARTMENT

REQUIRE CHIEF ACCOUNTANT (qualified) preferably with considerable experience of Transport Accountancy. Salary £1,625/£1,900 per annum. Forms of application (returnable by Friday, May 23, 1958) and further particulars available from Town Clerk, Town Hall, Manchester, 2.

[Another Official Notice appears on page 16]



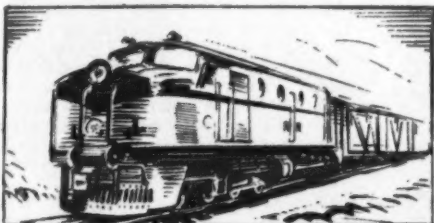
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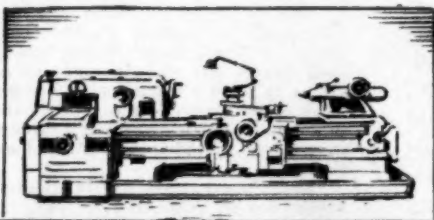
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They have recently been developed to carry still greater loads, and their fine material, processed under strict control, and their closely maintained standard of accuracy, result together in high precision bearings of real toughness and durability.

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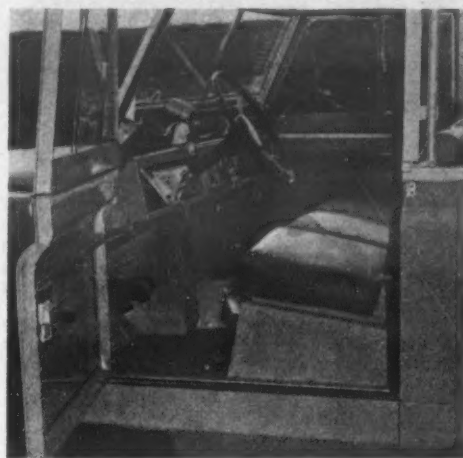
SERIES II LAND-ROVER

More Powerful Engine for Long Chassis

TENTH ANNIVERSARY OF INTRODUCTION

TEN years' experience in manufacturing and marketing the Land-Rover four-wheel-drive vehicle has been incorporated in the latest version of this reliable and versatile vehicle, which now appears with a pleasing new body style and other new features designed to increase its appeal in world markets. Since its introduction in 1948, over 200,000 Land-Rovers have been produced and its consistent appeal to operators in undeveloped territories has led to more than 75 per cent of production going to over 150 different countries, making the Land-Rover Britain's most exported commercial vehicle.

Without sacrificing any of the features which have contributed to this enviable international reputation, Rover engineers have produced in the Series II Land-Rover a better looking, more comfortable vehicle. The 109-in. wheelbase Land-Rover now has a 2½-litre petrol engine and has increased carrying capacity. To achieve a smoother and more pleasing appearance, the wings have been given a smooth curve which is carried along the waist line for the full length of the vehicle. The



Improved seating and pendant pedals are among the changes in the Land-Rover Series II, here seen with left-hand controls

rear window of the cab of the 109-in. vehicle is larger and rounded quarter lights have been added. Comfort has been improved by deeper and softer seating, while the attention to springs and shock absorbers has also effected additional improvements to the ride.

Pendant Pedals

Further refinements are pendant-type clutch and brake pedals, mounted high on the engine side of the scuttle, and an external fuel filler incorporating a telescopic filter tube which makes it easier to refill from cans. A single catch for the bonnet, released from the front of the vehicle, makes bonnet opening much quicker. A positive

ance; earlier square edges have been rounded and the apparent waist line lowered by extending the curve of the waist along the length of the body. The hood has also been rearranged. The introduction of quarter lights and a larger window in the back of the cab of 109-in. wheelbase vehicles has already been mentioned. Beam axles have been retained but a more comfortable ride has been achieved, apart from the improved seating, by increasing the track by 1½ in. and incorporating redesigned telescopic dampers. On 109-in. wheelbase chassis, progressive-rate springs giving 2-in. greater travel have been adopted and these are mounted on more forward-positioned hangers to improve stability. Widening the track has resulted in improved turning circles, by 3 ft. to 38 ft. on short-wheelbase and by 5 ft. to 45 ft. on long-wheelbase vehicles. Fully floating rear axles are standard on both versions.

Pendant pedals and a hydraulically operated clutch has been introduced to give better dust and dirt sealing and to simplify the system of levers by bringing them clear of the frame. The fuel filler is moved to the outside of the vehicle and the telescopic filler spout which facilitates filling from cans is retained. New-type catches for the tail-board are designed to remain secure under the roughest conditions. One-piece doors to the 109-in. wheelbase cab permit improved dust sealing and the replacement of plastics by non-scratch glass wherever possible overcomes the trouble of obscured vision due to scratches. Doors are now fitted with permanent sliding windows in metal frames and there are external lockable door handles set in deep recesses. The well-known Land-Rover features of body construction mainly of corrosion-resistant aluminium alloy, with all exposed steel parts such as door hinges, bumpers and so on heavily galvanised, and separate controls for engaging auxiliary low gear and front-wheel drive are retained.

Leading Dimensions

Overall dimensions of the Series II 88-in. wheelbase Land-Rover are length 142½ in. (2 in. longer), width 64 in. (1½ in. wider) and height unladen 77½ in. (1½ in. higher). The track is 51½ in. (1½ in. wider) and unladen ground clearance is 8 in. with standard 6.00-16 tyres and 8½ in. with 7.00-16 tyres. Dry unladen weight is 2,788 lb. and the maximum approved payload is driver and two passengers plus 1,000 lb. on normal roads, with a reduction of 200 lbs. across country. Heavy-duty springs are available and when fitted, the normal road rating is applicable on or off the road. The long wheelbase vehicle has an overall length of 175 in. (1½ in. longer), overall height has been reduced by 3 in. to 77½ in. and ground clearance increased by 1 in. to 9½ in. with standard 7.50-16 tyres. Kerb weight is 3,308 lb. and the recommended payload is three persons plus 2,000 lb. on the road, reduced by 200 lb. for cross-country.

The standard 88-in. Series II Land-Rover with petrol engine costs £640 and with diesel engine £100 more. The price of the standard 109-in. petrol-engined vehicle is £730 and there is a de-luxe version at £750. A diesel engine in either of these costs £90 extra. There is no purchase tax



Views illustrating both the new styling and two of the many off-road situations in which the original Land-Rover has excelled for 10 years. The 109-in. wheelbase vehicle in the right-hand picture now has a 2½-litre petrol engine

unit to secure the tailboard can be released rapidly and all windows are now of non-scratch glass. Special side and rear lights, separate flashing indicator lights and a separate rear number plate light are additional features.

The new four-cylinder 2½-litre petrol engine, which is available only in the 109-in. wheelbase chassis, develops 77 b.h.p. at 4,250 r.p.m., 25 h.p. more than the 2-litre unit. The engine is similar in basic design to the 2-litre Rover diesel engine, embodying three main-bearing counterbalanced crankshaft with tin-overlaid copper lead bearings, pushrod-operated overhead valves and high-lift roller-type tappets. The 2-litre diesel engine, which develops 52 b.h.p. at 3,500 r.p.m. remains the diesel alternative for all Land-Rovers except the 107-in. wheelbase station wagon and the earlier 2-litre petrol engine is the standard power unit for all but the 109-in. wheelbase chassis.

Thus the Land-Rover range now comprises:

- 88-in. wheelbase Land-Rover with either 2-litre petrol or 2-litre diesel engine.
- 109-in. wheelbase Land-Rover with either 2½-litre petrol or 2-litre diesel engine.
- 88-in. wheelbase station wagon with either 2-litre petrol or 2-litre diesel engine (temporarily out of production).
- 107-in. wheelbase station wagon with 2-litre petrol engine.

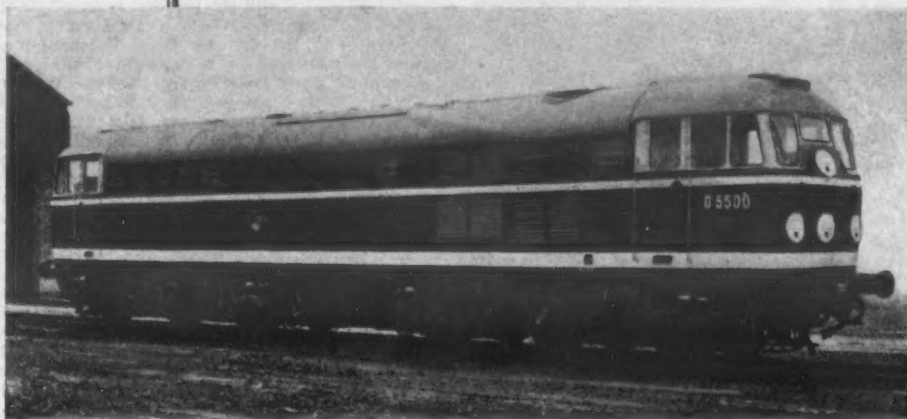
In the Series II vehicles, the body outline has been generally softened to give a smoother appear-

ance on the basic Land-Rover but on the 107-in. petrol-engined station wagon, purchase tax in the United Kingdom of £408 17s. brings the total price to £1,223 17s.

The Rover Co., Limited, has won an enviable reputation for high-quality automobile engineering since the early days of the industry; that proud tradition has been strengthened by the remarkable success achieved by the Land-Rover doing innumerable jobs in every quarter of the globe during the past 10 years. From the moment of its introduction in 1948, its versatility and rugged characteristics bred an enthusiastic demand that has continued to grow as service experience proved its qualities and continuous development improved its performance and widened the scope of its utility and application. The initial production programme of 50 vehicles a week over a five-year period had quickly to be revised and expansion in export business has led to the establishment of subsidiary companies in Australia, South Africa and Brazil. The latest move in this direction is an agreement under which the Land-Rover is to be manufactured under licence in Spain.

Few if any vehicles can have won such outstanding success. Within two years of its introduction with a 1.6-litre petrol engine at the 1948 Amsterdam Motor Show, the Land-Rover had earned £5 million in foreign currency.

The first of the new Brush 1,250 h.p. diesel electric locomotives for British Railways



fitted with



VACUUM CONTROLLED STRAIGHT AIR BRAKING

A driver's vacuum brake valve type SA controls the vacuum brakes on the train and, through a proportional valve, the air brakes on the locomotive. In addition a driver's self-lapping air brake valve provides an independent straight air control for the locomotive brakes.

A D.V.C.3 compressor provides air for the locomotive brakes, sanding and fuel raising.

Westinghouse Brake & Signal Co. Ltd., 82 York Way, London, N.1

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OUT OF PRINT

We regret to announce that the three very successful MODERN TRANSPORT publications "Practical Railway Operating," "British Railway Operation" and "Unification of British Railways" are completely out of print.



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SPECIALIST PRODUCTS IN CY ABRASION-RESISTING ALLOY

**LOCO
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BLOCK LIFE**
extended from
3 months to
2½ years

This is typical of the extra service being obtained from our CY Alloy Brake Blocks—which although remarkably resistant to wear, have no adverse effect on loco tyres. This is one of our most popular applications. After exhaustive tests many of the best known manufacturers of locomotives fit CY brake blocks as standard.

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Grams: "Wycliffe," Lutterworth

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NOTTINGHAM

Pavilion Building, Pavilion Road
West Bridgford
NOTTINGHAM 83481

TRAM AND TRAILER

Blackpool Tour Innovation

FOR some time Mr. J. C. Franklin, general manager of Blackpool Corporation Transport Department, has had under development a tramcar and trailer combination and the completed twin railcar set was formally handed over for service on April 9, when it was driven along the Promenade from Talbot Square to Fleetwood by Alderman Harold Grimbleston, Mayor of Blackpool. The motto of the borough is "Progress" and the new unit, work on which was carried out in the Department's own shops, is aptly entitled the Progress Twin-Car.

The two cars are both taken from the 1935 single-deck railcar series and the trailer has been stripped of motors and control gear. If the scheme is developed future trailers will, however, be specially

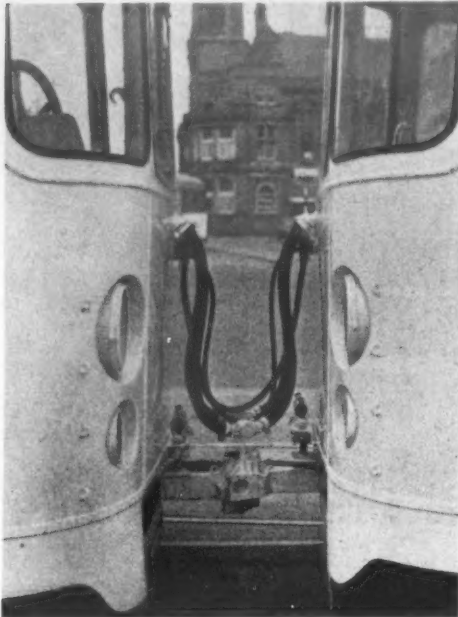
tactors are operated from a 24-volt circuit. In addition to the horn warning there is a three-note air whistle. The Westinghouse brake equipment operates in service on 75 lb. sq. in. air pressure, and low-pressure indicators are provided in the driving cabs. The maximum speed of the present set, using a field weakening notch, is 29 m.p.h. The average speed of the Promenade service is 11 m.p.h. and it may be desirable to alter the gear ratio on the motor car to get more rapid acceleration. The new unit is being used on a limited-stop tour, so it stands a chance of being the fastest car on the service, as is desirable, in any event. Willison coupling gear, supplied by the English Steel Castings Corporation, Limited, is employed between the cars. The continuous automatic air brake is by Westinghouse Brake and Signal Co., Limited, and the air-operated door gear by G. D. Peters and Co., Limited.

Brakes

The cars cannot be operated when doors are open as an interlock cuts off the traction current. If the conductor on the motor car signals start or stop, a bell rings in the driver's cab. The trailer car signals are conveyed by a distinctive buzzer. If the coupling parts between the cars the Westinghouse automatic brake is applied to both cars. In normal running the brakes are, of course applied to all wheels of both trams. In the unlikely event of the service air brake failing, rheostatic braking is available and also an emergency air brake. If door controls fail there are individual operating switches inside and outside each door for emergency use. Should it be necessary to stop the twin unit without the aid of the driver, the brakes on the conductor's platform can be used to cut off current and make a normal brake application. Other equipment includes windscreens with Sundym glass by Auster, Limited, Docker paints and varnish for the exterior finish and Alhambra ceilings by Thomas Thomson Sons and Co., Limited, of Barrhead. The moquette for the seats was provided by Lister and Co., Limited; Panax interior decoration was supplied by North British Plastics, Limited. The new cars will be used in the first instance

on touring work; the first of these tram tours began on September 6, 1956, with that season's Blackpool illuminations. Visitors appreciated being able to make a round trip without alighting and queuing at the termini. This tram tour replaced a bus tour which became difficult to operate to time owing to congestion by private cars. Moreover, the tram tour is along the Promenade in both directions whereas buses had to follow a one-way

the opportunity of viewing the displays from the nearest side. From Little Bispham the tour trams retraced their route to Central Station and continued along the South Promenade to Starr Gate, rounding the loop at that point and returning thence to the starting point. The complete circuit took about 90 min., and the fare charged 2s. from Monday to Friday and 2s. 6d. on Saturdays and Sundays. This service was operated by double-

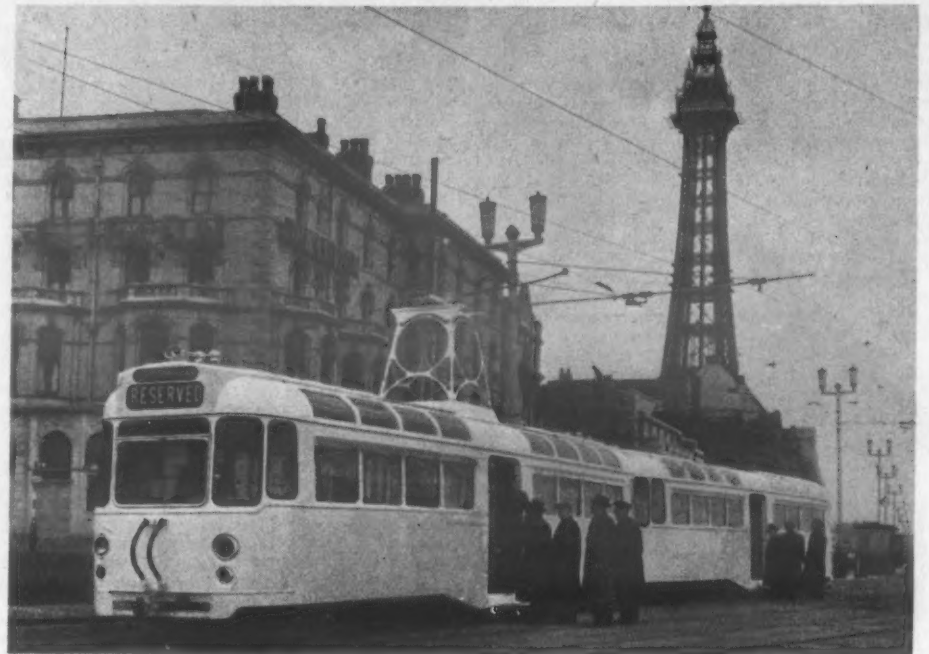


The Willison coupler and Westinghouse brake pipes between the cars

built in lightweight construction to save 4 tons tare weight. As the cars were 48-seaters the combined unit seats 96. Principal alterations comprised the coupling gear, continuous automatic brakes and door control. The traction current is 550 volts d.c. and it has been found desirable to provide traction current ammeters in the driver's cabs so that loads can be watched during acceleration. The pedestal controllers are of the Z6 type.

Equipment

The twin-tone horns, the bell and buzzer and the door control, emergency lighting and auxiliary con-



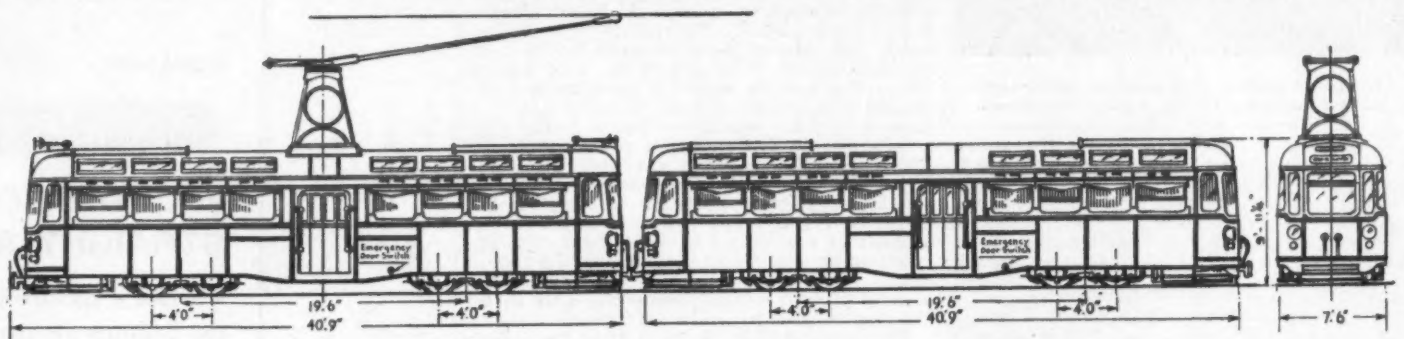
Single-deck tramcar and trailer for Blackpool Corporation service

routine. These tram tours achieved great popularity and operated during the illuminations period from Central Station. Passengers were taken along the North Promenade and past a fine series of illuminated tableaux to Bispham; from Bispham, the northern limit of the Lights, the cars ran on as far as Little Bispham turning circle, which they then traversed so that all passengers in turn had

deck cars. The present tour will be a "Coastal Tour" running the length of the system. As loops are installed at key points the Progress Twin-car will have no difficulty at terminals.

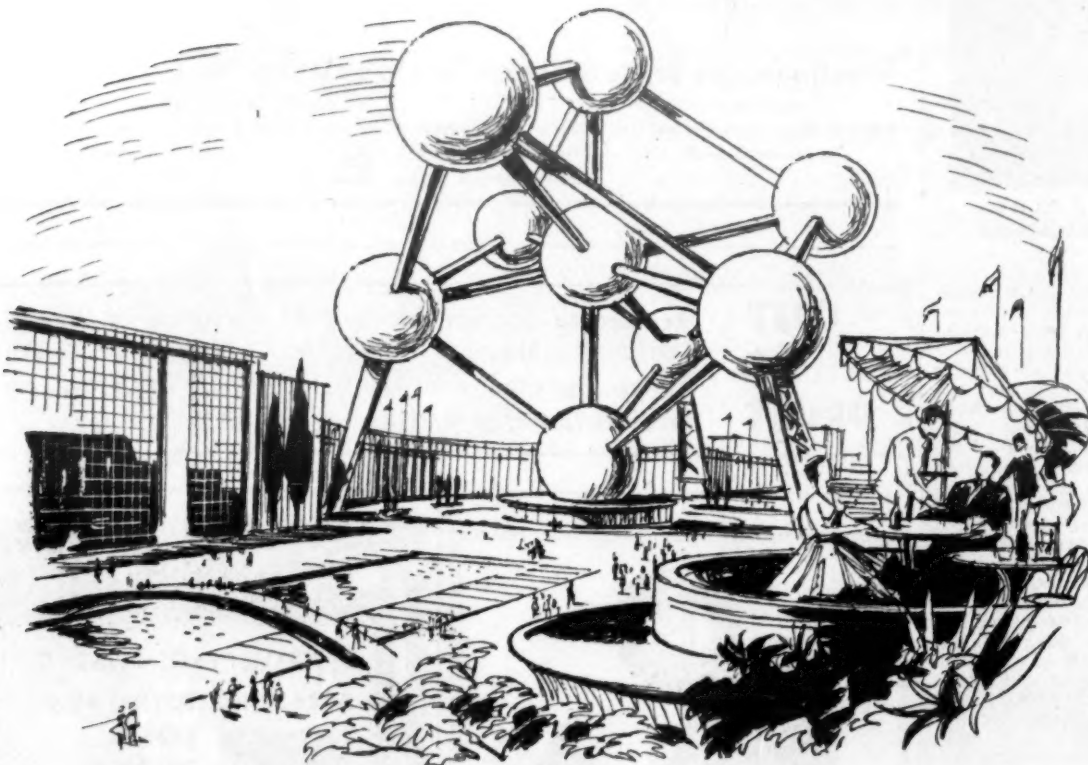
The first tramway in Blackpool was opened in October, 1884, and consisted of a line running for about two miles on the Promenade, constituting the

(Continued on page 14)



General arrangement of the single-deck tramcar and trailer at Blackpool

More than 1,000 Tons of Aluminium at the Brussels World Fair



The Atomium, symbol and centre of the Brussels World Fair 1958. This 320 ft. high structure represents an elementary iron crystal. The nine large spheres, each 59 ft. in diameter, are made from steel, clad with high purity electrolytically-brightened aluminium. The spheres, which are connected by tubes enclosing escalators, house exhibits showing the results of research into peaceful uses of atomic energy.

Aluminium is once again proving itself to be the Metal of the Age in this era of scientific adventure. Architects and designers of many nations are using this strong, light, corrosion-resistant metal with imagination and ingenuity at the Brussels World Fair in the national pavilions and exhibition halls. Here are just a few examples:

CANADIAN PAVILION

Aluminium span windows, stairway and external doors.

BRITISH PAVILION

30 tons of NORAL aluminium used for the roof.

AMERICAN PAVILION

Aluminium extrusions used to support transparent plastic roof.

RUSSIAN PAVILION

340 tons of aluminium sheet and extrusions used in the roof.

SPANISH PAVILION

Aluminium window frames.

TURKISH PAVILION

Aluminium roof.

PALAIS DES TRANSPORT

150 tons of Aluminium used in the roof structure.

PALAIS II

About 70 tons of aluminium used for the anodised facade.

PALAIS DE L'ELECTRICITE

An aluminium facade.

ROAD TRANSPORT VIADUCT

2,600 ft. viaduct will incorporate a decorative aluminium balustrade.

If you are visiting the Fair make a point of seeing the Kitimat-Kemano and Aluminium Exhibits at the Canadian Pavilion

Aluminium Union Limited

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ROAD PASSENGER TRANSPORT

The Challenge of Change

By R. MacKENZIE, B.Sc., M.Inst.T., General Manager,
Scottish Omnibuses, Limited*

DURING its quite short history, the road passenger transport industry has grown and developed in an impressive and spectacular manner, as statistics of mileage run and of passengers carried will readily show. The provision of services had important social and economic effects, particularly in areas where rail services were inconvenient or non-existent and the flexibility of the bus was being commercialised in a progressive and competitive atmosphere, resulting in a rapid development of road passenger traffic.

The intervening years have brought changes not only in our industry, but in the life and economy of our country. Many of these changes have beneficially affected our industry, but some in recent years have had the effect of slowing down the rate of its growth. We are, just at present, in a phase of contraction—the peak in our path of steady expansion has been reached and in some cases passed, as the following table of passenger journeys on stage carriage road services will show.

PASSENGER JOURNEYS ON STAGE CARRIAGE SERVICES IN GREAT BRITAIN

Year	Total Journeys (Millions)	Variation %
1931	9,474	—
1948	16,268	+ 71.71
1949	16,582	+ 1.93
1950	16,416	— 1.00
1951	16,311	— 0.64
1952	16,008	— 1.86
1953	15,737	— 1.69
1954	15,646	— 0.58
1955	15,555	— 0.58
1956	15,132	— 2.72

The percentage figures show the year-to-year variations.

The trend of passenger traffic in the road passenger undertakings in Scotland has also been downwards as illustrated in the accompanying table in which the figures for 1949-50 have been standardised at 100. Even after making an adjustment to the figures of the Scottish Omnibuses Group to offset the effect of the provincial bus strike, the total figures for Scotland show a decline to 89 per cent in passengers, and an increase to 101 per cent in mileage as compared with the year 1949-50.

It is evident that we are in a period of change and indeed in a period of retrenchment. It was perhaps unreasonable to expect that the high peak level of passenger traffic which was experienced

stations, so also must the motorist be required to pay the full cost of his operations.

It has frequently been said, and possibly accepted too, that the growth of private transport has been of direct benefit to our industry in that our peak traffic problem, and therefore our peak fleet, has thereby been reduced. It should not be overlooked that quite apart from the congestion already mentioned, the passenger lost at peak times is also lost at off-peak times, including weekends. Any failure on our part to cater adequately for the peak demand must undoubtedly accelerate the decline in our total business.

Television

As shown by the G.P.O. figures the growth of television has been remarkable. While accepting that, at least to some extent, television still has a novelty value just as radio had following its introduction, it seems unlikely that the extent of viewing will soon decline. Despite the charge that television is a time-wasting entertainment, the fact remains that it provides relaxation and diversion to many who previously travelled from home to obtain them. The provision of home entertainment has adversely affected those who provide public entertainment, and us with them. In the case of our industry, the effect is most pronounced at off-peak times when our buses are lightly loaded and when the extra passenger is welcomed even more than at any other time.

How long the popularity of television will remain is a matter of opinion. Having purchased a set, the householder and his family may not only be unwilling but also unable meantime to afford the expense of outside organised entertainment plus the attendant costs of transport. On the other hand, it seems unlikely that youth will be content to remain indoors to the extent that meantime is the fashion.

Costs of Operation

The recent recommendation of the Industrial Court that Central London busmen should receive a pay increase of 8s. 6d. per week, was accompanied by a statement from the Minister of Transport that the additional cost must be met not from higher fares but from economies and increased efficiency. Apart from effecting reductions in mile-

ANNUAL PASSENGER AND MILEAGE TOTALS IN SCOTLAND

	1949-50 standardised	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57
GLASGOW*								
Passengers	100	97	94	90	85	84	82	78
Mileage	100	103	102	97	96	96	96	95
EDINBURGH								
Passengers	100	99	95	93	91	89	88	86
Mileage	100	103	101	101	102	103	110	113
DUNDEE								
Passengers	100	97	96	96	96	99	100	99
Mileage	100	102	102	105	104	108	114	115
ABERDEEN								
Passengers	100	91	94	92	89	85	85	82
Mileage	100	95	95	92	92	91	96	94
SCOTTISH OMNIBUSES GROUP*								
Passengers	100	99	101	101	103	105	104	98†
Mileage	100	101	105	105	106	107	107	99†
TOTAL								
Passengers	100	98	97	95	93	93	92	88†
Mileage	100	102	104	103	104	105	105	99†

* Certain Glasgow services transferred to Scottish Omnibuses Group between November, 1955, and May, 1957.

† Provincial bus strike—July 20-28, 1957, inclusive.

Fuel rationing operative in 1956-57.

with little variation in the immediate postwar years, and upon which many of our present costs, including wages, have been founded, would continue indefinitely. That traffic level was influenced no doubt by the reaction to years of wartime confinement and restriction, by the lack of consumer goods, and by the difficulty in obtaining cars and other means of personal transport.

Causes of Decline

The present decline has been brought about by a variety of factors, many of them economic, and the major of these are as follows, although not necessarily in order of importance: (a) Increase in personal transport, e.g. private cars; (b) development of television; (c) increase in fares due to rising costs, and (d) a higher standard of life. We live in times of great national and personal prosperity, and while on the one hand the increasing prosperity of the individual may cause some reduction in the demand for public transport facilities, due to an increasing use of private transport, on the other hand it seems likely that the total transport demand, especially for pleasure purposes, may increase.

We may reasonably expect that private motoring will continue to develop further, particularly in the low horsepower field. Certainly the manufacturers accept that view, and have based their forward production programmes accordingly. The typical motorist is not a person who carefully considers the full costs involved, including the replacement of his vehicle—he concerns himself mainly with the running costs, and even then he fails—probably by choice—to assess properly what travel by car costs him in comparison with travel by bus. Having once tasted the independence of being a motorist, he is unlikely—as long as present conditions continue—readily to return to public transport. It must not be overlooked that the loss of traffic through private cars involves not only the car owner but quite commonly other potential bus users to whom lifts are more or less given free. In the more sparsely populated areas this increased abstraction from the limited traffic available is doubly serious.

Congestion

Not only does private motoring reduce our traffic volume, but in addition it increases congestion, reduces our average speed of operation, and as a consequence increases our operating cost per mile. The day must come when the most regular and most economical user of road space, which undoubtedly is the bus, is given the appropriate priority over the casual user and the parker—a priority which may be achieved less by regulation than by control through economic means. The convenience of the mass must not be sacrificed for the convenience of the few. Just as the bus passenger is charged and pays for the full cost of bus operations, including garages and in some cases bus

age, it is difficult to see how any major contribution can arise from reduction in these costs of operation which are under our own control.

As an industry, we are perhaps over-modest in making known, even to our passengers, the extent to which increased costs have been absorbed by an increasing standard of efficiency within the industry. Compared with 1939, current costs have increased by an additional 200 per cent despite which the fares charged to our passengers have been advanced by substantially less than 100 per cent. These are facts which should be more widely known than they are. Economies, once made, cannot be made again, and there remains throughout our industry little scope under our control, if any at all, for further economies to offset further increases in costs of operation.

Bonus Schemes

Notwithstanding the fact that a bonus scheme does produce more economical operation in a given undertaking compared with conditions in that undertaking prior to its introduction, the scheme eventually may act contrary to the interests of our industry as a whole. It is important that, before a bonus can be earned, we should first secure from the employee a reasonable output in return for the basic wage. The difficulty of obtaining a reasonable output, particularly in certain parts of the country, is well-known, but we must strive by good leadership and by firm and consistent discipline to obtain just that result, if we are to avoid, through bonus schemes, further increases in our costs of operation. The municipal undertakings, because of their system of control, may be at a disadvantage in this matter—which is all the more reason why the committees and councils should let the manager manage.

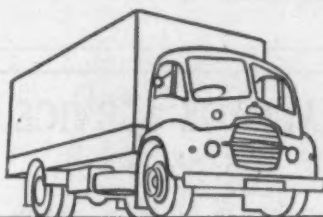
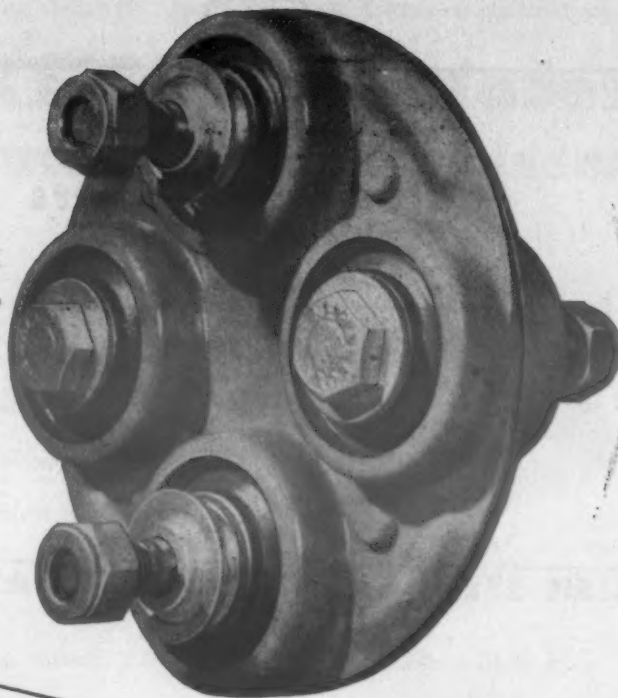
In our approach to work study and incentives, about which we hear so much today, we must bear in mind that these schemes are justified only if they produce more economical and efficient operation in our industry. We must ensure also that the increased pay packet obtained by employees on bonus working does not prejudice the position of other workers—such as drivers and conductors—to whom such systems cannot readily be applied. Undoubtedly our industry has suffered and still suffers from the high rate of wastage among platform staff. Frequent staff changes not only inflate our training costs, but—worse still—give to our passengers a lower standard of service and attention than otherwise would be the case. Despite the action of the trade unions in securing the virtual elimination of the service qualification between starting and maximum rates, a sound case can be made for their re-introduction and extension. It would be in the interests of our industry, and of the unions, too.

Bus Design

We live in a period of lively development, in which both the manufacturer and the operator are playing a part. With the continuous object of

*Abstract of a paper presented to the Scottish Road Passenger Transport Association at Turnberry on April 16.

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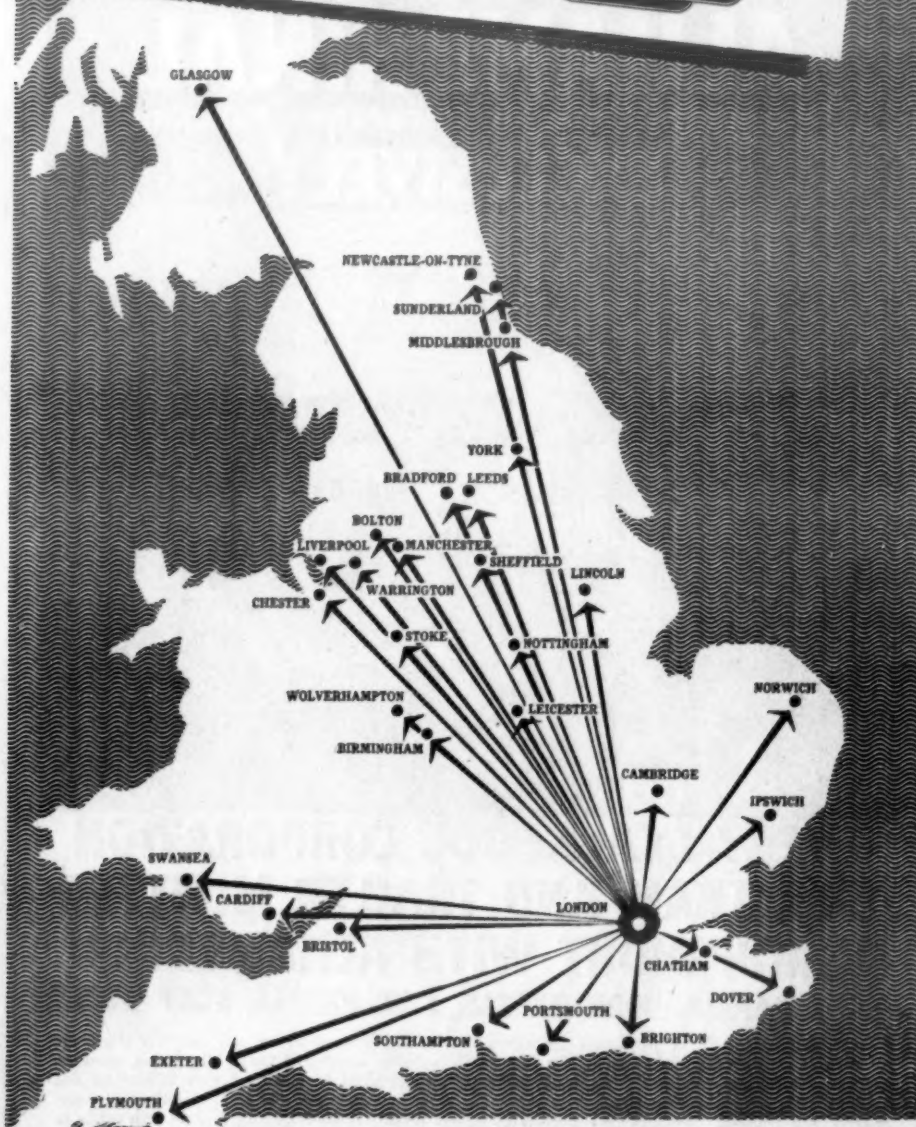
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BRITISH RAILWAYS



BRITISH RAILWAYS EXPRESS FREIGHT

Blackpool Tram and Trailer

(Continued from page 12)

first electric tramway system in the country and operated on the conduit system, children's iron hoops and sand washed over the Promenade permitting. The corporation took over operation of the line in 1892 and in 1898-99 conversion of the conduit to overhead system took place. To the early four-wheelers there were added 100-seat bogie Dreadnought cars, some of which ran until 1934. The Dreadnoughts had staircases leading straight up from the track level by the end bumpers.

The Promenade route was extended to Gynn Square in 1900, and at this point it met but did not connect with the Blackpool North Station to Fleetwood track which was operated by the Blackpool and Fleetwood Tramroad Company. Between 1901 and 1903, 35 new double-deck trams were added to the fleet; of these 15 were four-wheel open top, 12 were normal bogie open top, and eight were Dreadnoughts. Between 1911 and 1914, 24 open single-deck tram cars were introduced on the Promenade and on circular tours via Marton. The Blackpool and Fleetwood Tramroad was acquired by the Corporation under the Blackpool Improvement Act of 1919, and 41 single-deck cars were taken over. The route from North Station to Fleetwood is about 8 miles in length, of which about 6½ miles is reserved track. From Starr Gate along the Promenade is about 11.15 miles. In 1921, Blackpool had seven tram routes, namely: Promenade, Fleetwood, Lytham Road, Layton, Talbot Square to Central Station via Marton, Talbot Square to Royal Oak via Marton, and Central Station to Royal Oak via Central Drive, the two last-mentioned routes being extended during the holiday season to South Pier via Lytham Road and Station Road.

Modern Rolling Stock

Between 1923 and 1927, 32 new double-deck top-covered bogie cars were added to the fleet. In 1928 pantographs were tried on the Fleetwood service, but without success; they may be re-introduced after modifications to the overhead. In 1933, Central Drive and Layton routes were discontinued and replaced by bus services.

From 1933 to 1934, 25 streamlined luxury rail

coaches were introduced with a seating capacity of 48, and central entrances, followed by 12 new open single-deck "boat" cars, Nos. 225-236, which replaced some of the older tram racks. In 1934, there appeared from English Electric a 94-seat open-top double-decker with central entrance and two staircases, of which type 13 cars were eventually built. In 1935, 14 super enclosed 84-seat double-deckers were delivered, and 20 single-deck rail coaches, followed in 1937 by 20 more single-deck rail coaches with air-operated sliding doors. In 1937, 12 single-deck rail coaches were delivered with the upper half of the side windows permanently open, primarily for use during the summer.

In 1941 the 13 open-top super double-deckers were converted to top-covered cars similar to the 14 delivered in 1935. In 1942 the 12 single-deck rail coaches with open side windows were converted to enclosed type, as the standard type rail coaches. In 1944 the Promenade track was renewed between Cocker Street and Gynn Square, the clearance being widened at the same time to accommodate tram cars of a maximum width of 8 ft. Since then the whole of the track clearance between Blackpool and Fleetwood has been widened for 8-ft. wide cars.

During the 1939-45 war, a third track was provided at Talbot Square, Uncle Tom's Cabin, Thornton Gate, and Rossall, in order to improve the turning back of service cars, and the loop line at Rossall was built primarily for troops using the rifle ranges. In 1946 two pairs of new Maley and Taunton bogies were acquired. They were inside framed 6-ft. wheelbase bogies, similar to those used on American P.C.C. cars. For purposes of comparison, one pair had resilient wheels and spiral bevel gear drive, and the other had conventional steel wheels and worm gear drive, but otherwise the two sets were identical. A streamlined single-deck tram car No. 303 was fitted with the pair of bogies with resilient wheels. In 1952-53, 25 single-deck trams 50 ft. long and 8 ft. wide were introduced, each seating 56 passengers, with Vambac Crompton Parkinson control and resilient wheels. On a busy day the present fleet of 159 cars carries upwards of 240,000 passengers and the annual total of passengers is about 40 millions.

Road Passenger Transport

(Continued from page 13)

reducing costs of operation, advantage is being taken of the new maximum dimensions to increase seating capacities up to a new level of approximately 77 passengers. Thereby it is hoped to reduce the expensive peak-hour vehicle requirement, and possibly to reduce basic frequencies, although in that field the scope must be very restricted. Both manufacturers and operators are actively pursuing every method of increasing the passenger appeal of our vehicles, and of reducing the costs of cleaning and maintenance.

It would be difficult to overestimate the value of a well-heated bus, particularly in these days of competition from other forms of transport. A feature of the modern rail coach, which the public have not been slow to observe, is its effective system of heating which has inspired comparison unfavourable to the typical bus. Which of us today would buy a car without an effective heater? These are the conditions which we have to face, and if we are to retain, let alone increase, passenger traffic, even on relatively short-distance work, then we must at least match up to other forms of transport. That may mean fitting doors on double-deck buses except where they are employed solely on short-distance work. If it means pandering to the public, then let us pander to them. We exist to serve them, and our livelihood depends upon our ability to retain their patronage even in the face of competition from all sources. Nor must we underestimate the effect upon our platform staff of a well-heated vehicle.

Competition

That we have no monopoly of passenger transport is patent to all, for we are in competition with all kinds of private transport such as cars, motor cycles, mopeds and pedal cycles, and with organised forms of transport such as rail travel, and—to a limited extent at present—air travel. We do not even have a monopoly of road passenger transport for hire and reward, for we are in continuous competition with those operators whose main activities are private hire and contract business which requires no road service licence.

The whole system of licensing has worked well since its inception, and if any confirmation of its suitability in these times was required, it was clearly given in the recent report of the Thesiger Committee. But despite the efficient way in which the reasonable needs of the public have been met under the licensing system, our industry today is faced with a new and formidable challenge in the form of rail competition, not only in the long-distance field, but increasingly in the medium and short-distance spheres also.

Railway Competition

There is reason for concern that the understandable desire on the part of the railways to build up their passenger traffic may result in an oversufficiency of transport, unrelated to the existing or the potential traffic demand. Indeed, in some cases, such a position may already have been reached, with inevitable adverse effects on both road and rail systems. These increased rail facilities, which incidentally are being provided at a time when the general level of travel by organised means is already in decline, are unlikely to produce any new passenger traffic. On the other hand, they can scarcely fail to extract traffic which the road operators are already carrying efficiently and economically. Such extraction, however small its extent, will undoubtedly have the effect of increasing the already large number of unprofitable bus services.

A new form of traffic extraction, which is not without its significance, arises from the works bus, owned and operated by the employer for the carriage of his employees on a free-of-charge basis. These vehicles, which in most cases are redundant public service vehicles, are not employed for hire and reward and as a result cannot at present be regarded as p.s.v.s. The provision of section 19 of the Road Traffic Act therefore do not apply, and they are not subject either to the Certificate of Fitness Regulations or to examination by Ministry of Transport inspectors. Moreover, being classed as private cars, the rate of taxation is the flat figure of £12 10s. per annum.

What action should be taken to meet the challenge which these changes have presented? Among other things, we should:

- Ensure that the services provided are run to time and make the advertised connections.
- Man our buses with efficient, tidy, and benevolent crews who are not only able but willing and anxious to give to the passenger the highest standard of attention and personal service—in this respect we have much to learn from air travel. They must appreciate too that a vacant seat cannot be sold on the next journey and that the EXTRA passenger can make that little difference between profit and loss.
- Provide clean, attractive, efficient and modern vehicles, satisfactorily heated and ventilated, and well-driven. The capital saving in the spartan type of vehicle is infinitesimal when spread over the normal life and merely accentuates the comparison with private car standards.
- Insist upon a high standard of discipline among all grades of employees, not accepting the oft-expressed view that shortage of suitable staff prevents the maintenance of a satisfactory disciplinary system.
- Strive for the utmost economy in our operations, especially in the scheduling of duties, pressing the unions to implement their frequent promises to co-operate in achieving greater efficiency, not with the object of increasing profits but of maintaining the solvency of the industry and the security of employment of their members.
- Provide improved travel facilities by eliminating timing stops en route, by increasing overall journey speeds, by connecting existing services to provide through facilities thereby promoting the travel habit and combating competition—all at little or no extra cost.
- Modernise publicity arrangements, so that the public will be kept aware, in an effective and attractive manner, of the facilities available. Much more can be done to publicise the achievements and the flexibility of our industry by film shows, public addresses, and organised visits to premises.
- Ensure that inquiry offices are modern and attractive, staffed by personnel who are not only competent and well-mannered, but are convinced that they have something worth selling. And here let us remember that our best advertisement is the service we give, and that a satisfied passenger is our best ambassador.
- By our purchasing policy encourage contractors to discard the practice of quoting on a "rise-and-fall" basis, and to display confidence by offering firm prices for forward delivery.
- To the maximum extent refrain from reducing basic frequencies despite the increase of seats per hour while at the same time minimising peak duplication by the employment of large capacity vehicles. We must remember that to a large extent our industry was successfully built up on the basis of small capacity vehicles operating on a close headway.
- Seek to convince the public at large that bus travel is the most convenient and the most economical form of travel, giving the highest standard of personal service.

These are but a few random suggestions as to how we might meet the challenge with which all of us are faced today. The travelling public have quite simple and quite reasonable requirements. Whatever our position and whatever our responsibility, let us—all of us—ensure that they get them.

THE RAIL AWARD

(Continued from page 9)

tion from the unions which other industries might well envy since the wage improvements negotiated in 1956 and 1957. But the commission needed their further co-operation in the immediate future and certainly did not want any kind of battle with them.

"Battle for British Railways"

The only battle in which they were engaged was that for the future of British Railways. This battle could be won, and, if won, would bring much greater reward to the men than anything which was being claimed now. Management and men must fight on the same side if it was to be won. Increasing modernisation was the key to improvement in the railwayman's position.

"I do not mean," he said, "that our staff must wait for any improvement until complete modernisation has been achieved, nor even until 1962. On the contrary, the sooner the better. I have deplored, therefore, that the pace of modernisation has been checked recently by the cut in our investment programme. I should like to be able to give the order 'Full steam ahead' once more. I will lend my every effort to press for this and for any other measures by which the future of British Railways and of the British railwayman might be better assured."

He hoped that the union leaders and members would put this consideration first and do nothing at this "critical and difficult time" to jeopardise the future.

SOCIAL AND PERSONAL

B.T.C. Manpower Adviser

WHEN Mr. W. P. Allen retires from the post of manpower adviser at the headquarters of the British Transport Commission on June 30, he will be succeeded by Mr. Alexander R. Dunbar, at present assistant general manager, North Eastern Region, British Railways. Mr. Allen has held the appointment since 1954.

Mr. C. J. Doyle, O.B.E., has been appointed instructor at the B.T.C. work study training centre at The Grove, Watford.

Crofts Engineers (Holdings), Limited, announces that Mr. Granville Horsley has joined the board and is appointed joint managing director of the operating company, Crofts (Engineers), Limited.

Mr. E. John Hunter, B.Sc. (chairman, Swan, Hunter and Wigham Richardson, Limited) has been elected president of the North-East Coast Institution of Engineers and Shipbuilders.

The President of the Institute of Transport, Sir Reginald Wilson, accompanied by the secretary of the Institute, Mr. F. W. Crews, recently left by B.O.A.C. Britannia for a visit to the Southern Africa Division of the Institute. They will visit Johannesburg, Pretoria, Durban, East London, Port Elizabeth, Cape Town, Bulawayo and Salis-

Mr. S. J. Birch, assistant director of accounts, accounts and statistics division, B.T.C., has been appointed assistant railway accountant.

Mr. A. C. (Tim) Riley has retired as manager of the coach finishes section of Cillon, Limited, under superannuation rules. He had occupied that position for 22 years.

Mr. W. J. Hills, hitherto executive assistant, signal engineer's department, London Transport Executive, has been made telecommunications assistant, British Railways central staff.

Lieut.-Colonel C. A. White, deputy chairman and managing director of Mulliners, Limited, has been elected president of the National Federation of Vehicle Trades in succession to Mr. J. W. Shirley, director and general manager of Park Royal Vehicles, Limited. Mr. B. G. Bonallack and Mr. R. E. Sugden were appointed vice-presidents.

At the annual general meeting of the Scottish Road Passenger Transport Association this week, Councillor R. A. Raffan, convener, Aberdeen Corporation Transport Committee, was elected president for 1958-59 and Mr. J. Mackie, general manager, Belfast City Transport, was elected vice-president.

Mr. R. Massey, chairman and managing director of James W. Cook, Limited, has decided to retire. Mr. F. A. Leathers has joined the board and has been elected chairman. Other new directors are Mr. D. Cory-Wright and Sir Ralph Metcalfe. Mr. H. P. Robottom has been appointed managing director.

The railway and civil engineering firm, Eagre Construction Co., Limited, Scunthorpe, has taken over the family-owned Isca Foundry Co., Limited, Newport, Monmouthshire, more than 100 years old, which manufactures railway materials, switches and crossings, buffer stops, turntables, pressed steel chairs and iron castings, etc. Mr. John Spafford is now chairman and managing director of both companies.

Mr. John Diebold, the American authority on automation, is to join with the British management consultants, Urwick, Orr and Partners, Limited, in a new company providing a consulting service to British business on problems of installing electronic computers. It will be called Urwick, Diebold, Limited. The British partner is one of the largest British management consulting firms, established in 1934, with some 1,000 British businesses among its past and present clients. Mr. Diebold, it is said, first brought the word "automation" before the public.

Several hundred industrial leaders, engineers, scientists and other specialists from 40 countries are to meet in Harrogate between June 9 and 21 for the 1958 assembly of the International Organisation for Standardisation. It will be the first time the ISO assembly has been held in Britain; previous meetings were at Stockholm three years ago and before that in New York and Paris. The 1958 series of meetings will be of the full assembly, of the ISO Council and of 15 specialised technical committees. Arrangements are in the hands of the British Standards Institution.

Before the formal proceedings at the last meeting of the National Council for the Omnibus Industry, Mr. R. I. H. Longman, the vice-chairman of the national council and chairman of the Conference of Omnibus Companies, on behalf of the employers' representatives on the council made a presentation to Mr. Frank Coyle to mark his retirement as joint secretary (trade union side) of the Council from March 1. Mr. Coyle, in expressing his appreciation of the gift of the handsome television and radio receiving sets with which he had been presented, referred to the good relationships which had existed between the two sides of the National Council since its inauguration in 1940.

The G.W.R. special trainees' 27th annual reunion took place at the Great Western Royal Hotel on April 11. The chair was taken by Mr. L. Dennis, assistant Continental superintendent, Southern Region. The toast "British Railways" was proposed by Mr. C. A. M. Peaty, district commercial manager, Lincoln, Eastern Region, and responded to by Mr. J. H. G. Russell, assistant district commercial manager, Bristol, Western Region. "Colleagues Overseas" was proposed by Mr. E. Havers and responded to by Sir Arthur Kirby, recently general manager of the East African Railways and Harbours, who has now returned to this country to the position of High Commissioner for East Africa in London, and also by Mr. R. F. Stroud, recently returned from Calcutta.



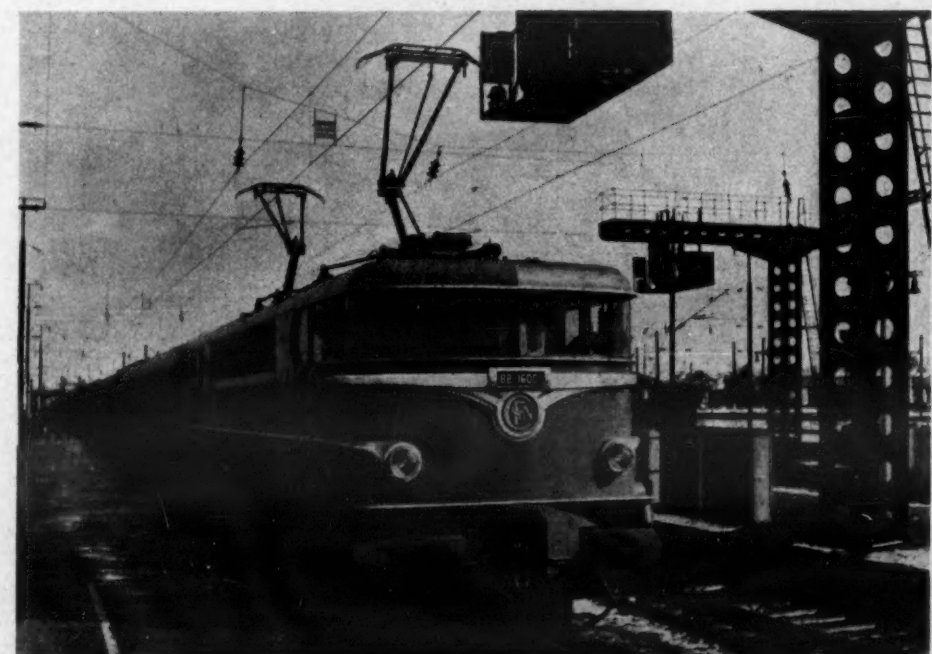
Mr. F. W. Crews and Sir Reginald Wilson at London Airport

bury. Inspections of transport installations at each centre will be made and the president will address meetings of the members. The tour will conclude with a visit to the Copperbelt in Northern Rhodesia and the return to London will be made early in May.

Colonel R. T. Hartmann has resigned his appointment as executive director of the British Straddle Carrier Co., Limited, one of the Fisons group of companies, which appointment he has held since 1953, in order to devote more of his attention to the continually expanding business of Materials Handling Equipment (Great Britain), Limited, of which he is managing director.

To fill vacancies on the council of the Public Transport Association which will occur at the annual general meeting on May 14, the following have been nominated as representatives of company operators: Messrs. R. Barr, R. W. Birch, R. J. Ellery, F. W. Hodgkinson, W. Leese, H. Orme White, D. M. Sinclair, and the following as representatives of municipal operators: Messrs. J. Atherton, R. C. Moore, W. Robinson.

At the invitation of the British Transport Commission and the Locomotive and Allied Manufacturers Association, a party of Chinese railway representatives is in this country to investigate British manufacturing potential. A group of trading corporation representatives with purchasing powers is also visiting Britain. The railway party visited the Metropolitan-Vickers works at Trafford Park and G.E.C. at Witton.



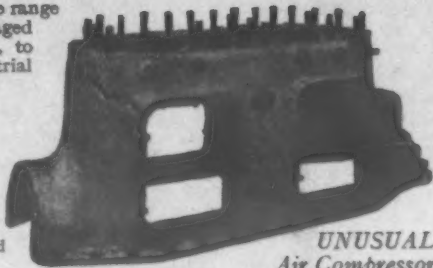
One of a batch of 24 new 50-cycle locomotives for S.N.C.F. electrification between Paris and Lille and also for service between Luxembourg and Basle. Built by Creusot-Schneider of Jeumont, the 4,280-h.p. 84-ton unit is rated for 100 m.p.h. running with 400-ton trains. The most striking feature is the Faiveley lightweight current collector (as on order for British Railways); the front collector was about to be lowered after use in backing on to the train at Thionville while the other had already been raised for departure. On test this unit has achieved 99.4 m.p.h. and covered 86.2 miles between Strasbourg and Basle at 85.7 m.p.h.

BARIMAR Restores Unusual Air Compressor Crankcase

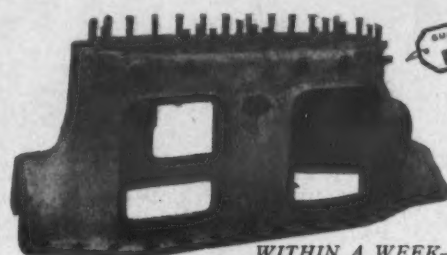
Compressors of all types come within the range of Barimar Scientific Welding; damaged compressors, from small tyre inflators, to very large ones used by the big industrial undertakings.

A number of compressors come from overseas customers. Many kinds of compressor crankcases, too, have come to Barimar, but these pictures are unique—for never before have Barimar shown a crankcase of an air compressor of this design, or of one damaged like it. The three lengthy cracks reveal the damage in the first illustration. There were similar cracks on the other side, and the damage was so severe that the casting was practically severed in half!

The welding had to withstand the full strain on the casting and, after repair by Barimar, it did so. The alignment was restored, the casting re-machined where necessary, and the crankcase was then ready for instant service. A difficult repair and a "rush" job, as this compressor formed part of a big installation in a great oil refinery, operating day and night. Barimar returned the crankcase within a week, and the cost was infinitely less than that of a new replacement! Barimar also repaired the broken Cylinder Head of the compressor, by the time the crankcase was ready, and promised the owners, that the repairs would stand up to the most strenuous service. Their Money-back Guarantee confirmed that assurance, too!



UNUSUAL Air Compressor Crankcase shows only some of the damage Barimar had to repair.



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CYLINDER BLOCKS: Every kind of crack and fracture, broken bores, scored bores, pitted and sunken valve seatings, CYLINDER HEADS: Broken and cracked heads, cracked and worn valve seats, broken, warped or damaged facos, broken, rocker standards, defective holes, stripped plug threads, IRON OR ALUMINIUM.

CRANKCASES: Fractures caused by broken connecting rods and run big ends, broken-off heater arms, smashed sumps, and flywheel housings, broken bearing plug threads, IRON, ALUMINIUM OR ELECTRON.

CRANKSHAFTS: Broken across web or journal, cracked, scored, threads stripped or tapered worn.

TRANSMISSION: Cracked or broken gearbox and axle casings, damaged gear teeth, worn splines and tapers, fractured shafts, cracked differential casings.

They build durability at Fort Dunlop



DUNLOP ROADTRAK MAJOR

Deep, self-cleaning shoulder bars for positive grip on loose, earthy ground and deep ribbed centre tread for maximum mileage on the road ensure top performance for on-and-off the road service.

with Science, Accuracy and Experience

Even though thousands of tyres are made at Fort Dunlop every day, they are not mass produced. Every Dunlop tyre is individually built. It is the work of experts—working as a team and supported by the most modern machinery, materials and methods. Every Dunlop tyre is built to give you a high standard of performance in terms of mileage, safety and comfort, in fact, complete confidence to meet every driving condition.

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built better to last longer!

IMPORTANT CONTRACTS

Rootes £350,000 Dutch Order

SUCCESS of two Commer 1½-ton delivery vans in a six-month trial against competing German, French, Dutch and British vehicles has won for the Rootes Group orders from the Netherlands totalling 525 vehicles valued at over £350,000. The latest order is for 150 vans for delivery by the middle of this year, to join 375 similar petrol-engined vehicles already operated by Van Gend en Loos, the Dutch firm which handles parcels and light freight delivery for Netherlands Railways. Although in the Netherlands, traffic drives on the right, all the vans have right-hand control to facilitate entering and leaving the cab when making deliveries.

Portugal Orders Guy Warrior

A recent routine visit by Colonel Arthur Jerrett, managing director, Guy Motors, Limited, to the Portuguese operator, Uniao de Transportadores para Importacao e Comercio, led to an initial order being placed by U.T.I.C. for 10 Guy Warrior bus chassis valued at nearly £23,000. The vehicles will have an 18-ft. wheelbase, Gardner six-cylinder horizontal diesel engines and five-speed epicyclic gearboxes.

Southern Region Contracts

Recent contracts placed by the Southern Region of British Railways include the following:

Piling and Construction Co., Limited, Croydon, for piling and foundations at Yeovil Town.

Taylor Woodrow Construction, Limited, Southall, for construction of five signalboxes and 14 relay rooms for extension of electrification, Kent Coast Lines, and new traffic shed at Woking.

The Walter Kidde Co., Limited, Greenford, for installation of automatic fire protection at Shepherds Lane (Brixton) and Beckenham Junction and other signalboxes.

The Butterley Co., Limited, Butterley, for renewal of superstructure of Fordmill Lane Bridge, Catford.

The Pyrene Co., Limited, Brentford, for installation of automatic fire protection at Sittingbourne signalbox.

Kariba Dam Equipment

Despite the main contract for the Kariba Dam going to an Italian firm, much of the equipment for work on the project is being supplied by British firms. Among these orders has been that for over 50 Bedfords with Anthony Hoists tipping gears supplied by the local Bedford dealer, Modern Auto Services, Limited, Lusaka. These vehicles are all fitted with bodies built by Anthony's associate company, Brockhouse (Rhodesia), Limited. The Anthony gears were shipped direct to Rhodesia, married with the bodies, and the complete vehicles assembled by Brockhouse.

Latest Viscounts for Airwork

Vickers - Armstrongs (Aircraft), Limited, announced last week that Airwork, the British independent airline, has ordered two of the new Vickers Viscount 810 series turboprop air liners for delivery in the latter part of 1958. The total number of Viscounts sold is now 379. Airwork plans to use the new Viscounts on its African Safari services which it is at present operating with Viscount 736s. (The Safari services are maintained by Airwork and Hunting-Clan, which also uses 700 series Viscounts.) The new 810 series Viscount is 40 m.p.h. faster, having a cruising speed of 365 m.p.h. as well as increased range and capacity. Airwork's version of the aircraft will have the type-number 831 and will accommodate 60 passengers in four-abreast seating.

TENDERS INVITED

THE following items are extracted from the Board of Trade Special Register Service of Information. Inquiries should be addressed, quoting reference number where given, to the Export Services Branch, Board of Trade, Lacon House, Theobalds Road, London, W.C.1.

May 2—Union of South Africa.—South African Railways for up to 45 3-ton lorries, up to five 2½ cu. yd. tipping lorries and up to 25 5-ton lorries (tender 31890); and up to 50 cars and six utility vehicles (tender 31851). Photocopies of tender documents available from Export Services Branch, B.O.T., price 2s. for 31890 and 3s. for 31851. (ESB/8896/58.)

May 7—Vietnam.—International Co-operation Administration for nearly 4,000 commercial vehicle tyres and tubes. Copies of tender documents from The Vietnamese Embassy, 12 Victoria Road, London, W.8, quoting invitation No. 311-17038.

May 8—Belgian Congo.—Ministry of Colonies, Brussels, for three petrol-engined DUMP LORRIES. Photocopies of tender documents from Export Services Branch, B.O.T., price 9s. (ESB/8847/58.)

May 17—Sudan.—Sudan Railways for SIGNALLING MATERIALS for 16 stations on the Sudan Line. Particulars and drawings from the Controller of Stores, Sudan Railways, Atbara. (Contract No. 1755.)

May 31—Iraq.—Iraqi State Railways for two standard-gauge bogie second-class PASSENGER COACHES. Tender documents from the Directorate-General of Railways, Baghdad West, at ID. 108, per set. (IRS/C/42/57.)

June 6—Portuguese East Africa.—Ports, Railways and Transport Department for SIGNALLING EQUIPMENT and BARRIERS for four level crossings. Photocopy of tender documents from Export Services Branch, B.O.T., price 1s. (ESB/8387/58.)

Agency Inquiry—Portuguese East Africa.—Boror Commercial, Caixa Postal 4, Lourenço Marques, is interested in acting as sole representative of United Kingdom manufacturers of railway LOCOMOTIVES, LORRIES, RAILWAY PORT EQUIPMENT, CRANES and ROAD MACHINERY. (ESB/8860/58.)

OFFICIAL NOTICE

ULSTER TRANSPORT AUTHORITY
CONTRACT FOR 24 DOUBLE-DECK
OMNIBUS BODIES

THE Authority invites tenders from Body-building firms for:

24 Double-deck Omnibus Bodies to U.T.A.
Specification mounted on Chassis supplied by the Authority.

Tender forms, specifications, drawings and other details of the Contract may be had on application to the Stores Superintendent, Duncrue Street, Belfast.

Tenders will not be considered unless submitted on the Authority's Form of Tender.

Applications for tender forms, drawings and specifications must be accompanied by a deposit of £5, which will later be returned provided a bona fide tender is lodged (whether successful or not), or provided the Authority is satisfied there was some good reason for not lodging a tender, and subject, in either case, to the drawings and specifications being returned.

Tenders should be sent to the Secretary, Ulster Transport Authority, 21 Linen Hall Street, Belfast, in a sealed envelope endorsed "Tender for Double-deck Omnibus Bodies" so as to be delivered not later than 5 p.m. on Monday, May 5, 1958.

An official receipt must be obtained for each tender delivered by hand. Tenders sent by post should be registered.

The Authority does not bind itself to accept the lowest or any tender.

[Another Official Notice appears on page 10]

SHIPPING and SHIPBUILDING

"Canberra" Model at Brussels

A LARGE scale model of the new 820-ft., 45,000-gross ton, 27-knot P. and O. passenger liner *Canberra* is now on display at the Brussels Exhibition. It is to be found in the British Pavilion in the British electrical and allied industry section, and will demonstrate the extent to which electricity is used at sea. It will be recalled that this ship, for the U.K.—Australia—North America service, is to be of advanced design, with her main turbo-electric engines aft, permitting greater comfort and space for the 3,250 passengers and crew. There will be thirteen decks and the ship will be fully air-conditioned. She is building at Harland and Wolf, Limited, Belfast.

Situated at each end of the main display unit in the Brussels Exhibition are telephones connecting with twenty main compartments of *Canberra*, which are described in English, French and German. These are operated by simply dialling the number selected from an illustrated panel. An unusual transporter device, which will be fitted into the forward part and which will operate to load and unload both cars and cargo horizontally through the ship's side, is demonstrated on the model. Lifeboats will not be carried at the traditional height of the boat deck, but will be stowed three decks down, flush with the ship's side. The moving lifeboat on the model shows how the davit mechanism slides the lifeboat into position over the water.

Nationalisation Date for Colombo

NATIONALISATION of the Port of Colombo has been fixed for July 1, according to a Colombo report. From this date, and possibly earlier, the new Port Cargo Handling Corporation will handle all cargo.

Flushing Harbour to be Extended

FLUSHING harbour will be able to serve bigger tankers in future. Work on an expansion project is to be started in August. Seven tanks with a storage capacity of 15,000 cu. m. will be built in addition to the existing 12 tanks with a total capacity of 26,000 cu. m. After completion of the tanks the storage capacity for oils and oil products will thus have been increased to 41,000 cu. m.

Marconi-Postans Anti-Fouling System

ULTRASONIC anti-fouling equipment of the Marconi Protector type has been installed in the new cargo ship *Temple Main*, 10,400 tons deadweight. Protector equipment has been developed jointly by the Marconi International Marine Communication Co., Limited, and Postans, Limited, and is designed to discourage the growth of barnacles and other marine organisms on the vessel's hull by maintaining continuous ultrasonic vibrations in the shell plating. The ultrasonic oscillations are generated by a transmitter unit installed in the engine-room, and the pulses are applied to the hull through transducers fixed to the shell plating. The system is already in use on a number of large cargo and passenger liners, some of which have reported marked improvements in fuel economy.

FINANCIAL RESULTS

NOTES on the trading results, dividends and financial provisions of companies associated with the transport industry are contained in this feature, together with details of share issues, acquisitions and company formations or reorganisations.

Transport Development Group

Group net profit of Transport Development Group, Limited, for 1957 was £150,278 (£141,441); during the year the Erith and Dartford lighterage group was acquired. Dividend for the year is 12½ (11) per cent, and there is a 1 (14) per cent distribution, tax free, out of capital profits.

Clayton Dewandre

Due to maintenance repairs at the Lincoln works, labour costs and intense foreign competition, the Clayton Dewandre Co., Limited, reports that group trading surplus fell to £446,045 (£502,241) for the year 1957. Dividend is 20 per cent (same). It is planned to spend £200,000 during the current year on new products.

North British Locomotive

A group net loss of £8,414 (£43,430) was sustained by the North British Locomotive Co., Limited, in 1957, after tax recovered. No dividends; preference arrears £75,000. However, with increased output, the directors confidently anticipate that 1958 will see the company again earning a profit. With orders already on the books and those received this year, the works will be fully employed for some time to come, but there still remains the question of building up the labour force. During 1957, the value of new orders amounted to approximately three times the annual average value of orders received during the previous five years. A considerable amount of the plant necessary to change over from the manufacture of steam to diesel locomotives has still to be delivered and paid for, it is stated.

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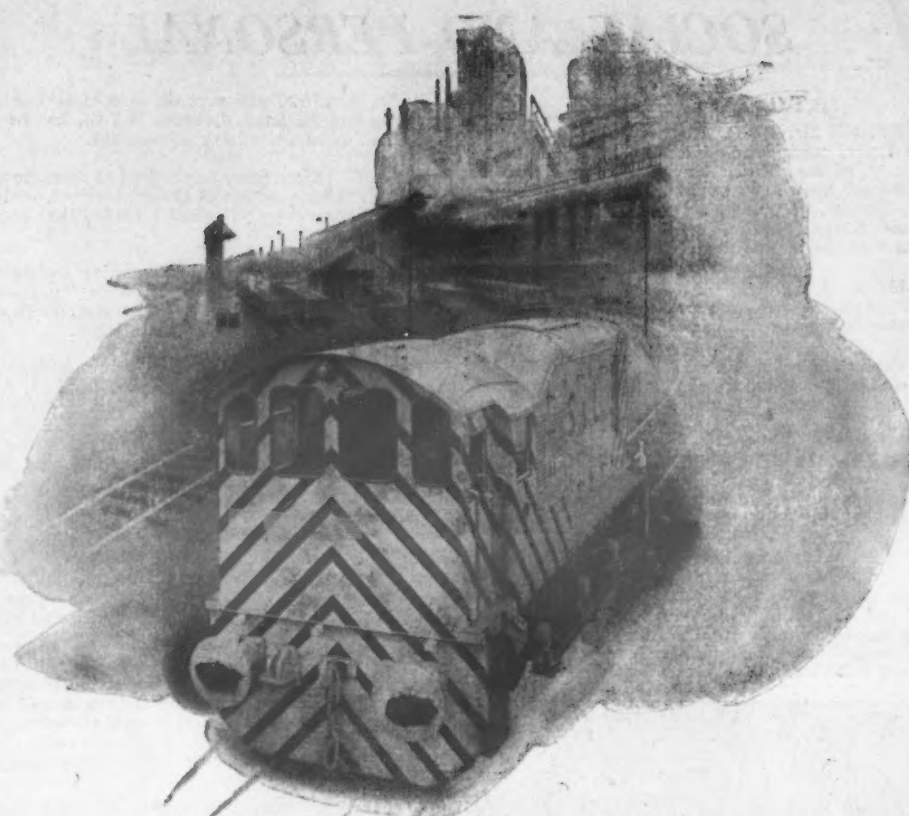
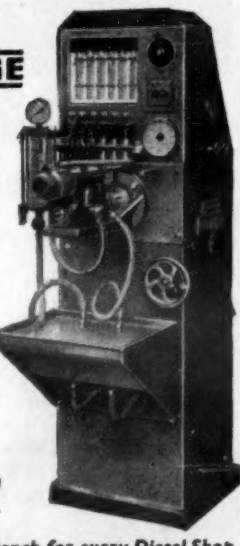
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flow calibration
system.

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A new low cost Test Bench for every Diesel Shop



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Stewarts & Lloyds Limited state that the Brush-Traction Diesel-Electric

Locomotives supplied over twelve months ago for shunting services in the Integrated Iron and Steel Works at Corby are giving very satisfactory service.

Brush Traction Locomotives, recognised for their performance under the most arduous conditions, are also giving outstanding service to the Steel Company of Wales; Consett Iron Co.; Lever Bros.;

and other large industrial users.



Illustrated above is a 0-6-0
Diesel-Electric Shunting
Locomotive of 400 H.P. made
by Brush Traction Ltd.

Diesel-Electric Shunting Locomotives

—the logical choice

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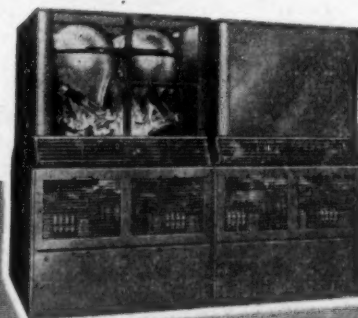
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